Dealer Opposition to $15 Trade-in Plan 'All News' to Gas Utility Executives

(Concluded from Page 1, Column 5)

the two is the recently inaugurated policy of $15 allowances for ice boxes.

A group of utility officials, when approached Saturday, professed to know nothing of the dealers' resentment, claiming that "it was all news to them."

The general facts in the situation appear to be these:

That Consolidated Edison Co., Inc., through its metropolitan branches and subsidiaries—the Westchester Lighting Co. and Yonkers Electric Light & Power Co.—announced and began the campaign April 1, to be continued throughout the month.

That the Electrolux offer consisted of a $15 reduction or allowance on the retail price of a new Electrolux for the trade-in of an ice box or ice chest of any description.

That the $15 allowance is to be absorbed by the utility, and not the individual dealer.

That neither the utility nor its subsidiaries are at present merchandising either gas or electric appliances through their own branches.

That any dealer approved by the utility, whether at present handling Electroluxes or not, may place any number of Electrolux refrigerators on his showroom floor to sell under the terms of the campaign without subsequent franchise obligations.

That all delivery and financing of boxes sold during the campaign is handled by the utility.

A few days before the campaign was officially scheduled to "break," Refrigerator Association of New York, through its managing director, Mr. Callahan, protested to Floyd L. Carlisle, chairman of the utility's board of directors. It is understood that Mr. Callahan and officials of Consolidated Edison conferred on the matter March 30, at which time no solution to the situation was reached.

The following telegrams exchanged between the managing director of the distributors' association, which represents Frigidaire, Crosley, Electrolux, General Electric, Kelvinator, Leonard, Norge, Sparton, Stewart-Warner, and Westinghouse distributors in New York City, and the vice president of Consolidated Edison, reveal the crux of the situation:

"New York, March 30, 1937.
"Mr. Floyd L. Carlisle
Chairman of the Board of Directors
Consolidated Edison Company of New York, Inc.
4 Irving Place
New York, New York

"The Refrigerator Association of New York, Inc., representing the wholesale distributors of the following refrigerators — Crosley, Electrolux, Frigidaire, General Electric, Kelvinator, Leonard, Norge, Sparton, Stewart-Warner, and Westinghouse — hereby strongly protest to you as a member of this association and as head of the utility company serving this area against the recently announced Consolidated Edison Company's sales promotion plan scheduled to break April first on Electrolux refrigerators which you distribute on the grounds of discrimination and of introducing unsound business practices into the refrigeration industry. We urgently request a postponement of the opening of this plan and the withholding of any advertising pertaining to it until such time as representatives of this association have an opportunity to fully discuss with you and your officials the adverse effects of this proposed plan on the mechanical refrigerator industry. Please wire your decision sometime Wednesday, March thirty-first.

"ARTHUR F. CALLAHAN,
Managing Director,
Refrigerator Association of New York, Inc."

"New York, March 31, 1937.
"Arthur F. Callahan,
Managing Director,
Refrigerator Association of New York, Inc.
60 East 42nd St.,
New York City, N. Y.

"Your nightletter dated March 30 addressed to Floyd L. Carlisle of the board of directors of this company has been referred to me. It is my understanding that at our meeting yesterday you were representing the Refrigerator Association of New York Incorporated and that during the hour that I and others of this company spent with you you presented all the questions which you had in mind and that such questions were fully answered. In view of this understanding can see no useful purpose that would be served in postponement of the proposed plan but should additional questions have arisen I and my associates will be pleased to meet with you again at your convenience upon your advice and we will be pleased to again outline the beneficial effects of this proposed April campaign for the utilities, for the mechanical refrigerator industry, for the prospective users of mechanical refrigerators, and for the customers of this company as a whole.

"E. F. JEFFE, vice president,
Consolidated Edison Co. of New York, Inc."

"Mr. Floyd L. Carlisle,
Chairman, Board of Directors,
Consolidated Edison Co. of New York, Inc.
4 Irving Place,
New York City, N. Y.

"In response to the reply of Mr. Jeffe to our telegram sent you March 30 we have today wired Mr. Jeffe as follows, quote: Your telegram of March 31 considered by the members of the Refrigerator Association of New York, Inc., to be unsatisfactory and not answering the basic objections already presented to you. Our communication to Mr. Floyd L. Carlisle was sent for the reason that after our representative and you discussed the matter you did not seem to realize what is so evident to all of us: that your new gas refrigerator sales policy is destructive to the electrical refrigerator industry. While we sympathize with your desire to build up a gas load and desire to continue to help you build up an electrical load through electric refrigeration it must be apparent to you that there is no sound basis of value in fifteen dollars allowance for used ice chests of little or no value and that you are establishing a progressively destructive policy that must result disastrously for all. Your new policy can only have the effect of establishing in the public mind fictitious values of old refrigerators of all kinds. The lack of a sound basis of value in your plan seriously affects the heavy investment involved in the electrical refrigerator industry and is highly detrimental to the welfare and earnings of the thousands engaged in the industry. This matter is of sufficient vital importance to the industry to justify you in discontinuing your plan immediately. Unquote. In considering this matter may we remind you that the distributors of electric refrigerators of this association and their dealers have sold and placed on the lines of your system companies according to our records over half a million electric refrigerators in the past four depression years alone in addition to a larger quantity in previous years thereby increasing your companies' revenues many millions of dollars annually.

"ARTHUR F. CALLAHAN,
Managing Director,
Refrigerator Association of New York, Inc."

A copy of this telegram, signed by Mr. Callahan, was sent to Mr. Jeffe the same day.

North of New York in Westchester county, richest suburban county in the country, which is served by Consolidated Edison's subsidiaries, Westchester Lighting Co. and Yonkers Electric Light & Power Co., dealer feeling against the utility's Electrolux campaign is running particularly high.

Here the Westchester Gas & Electric Appliance Dealers Association, comprised of 78 members, is understood to be preparing to take action against the campaign through the county utility, Westchester Lighting Co. Officers of the association have called a special meeting to discuss the situation tomorrow night at White Plains.

Fred J. Gruel, general sales manager of the Westchester Lighting Co.'s main office in Mount Vernon, declared Saturday that no official representation of the dealer association's attitude had as yet been made to the utility's management, and that the campaign was simply the forerunner of a movement by Consolidated Edison and its subsidiaries to turn over the merchandising of gas appliances to independent dealers in the metropolitan and suburban New York territory.

The question which appears paramount in the minds of most Westchester dealers was phrased by one veteran of seven years in refrigeration merchandising as follows:

"When this April campaign is over, is the utility going to enter the gas appliance merchandising business?"

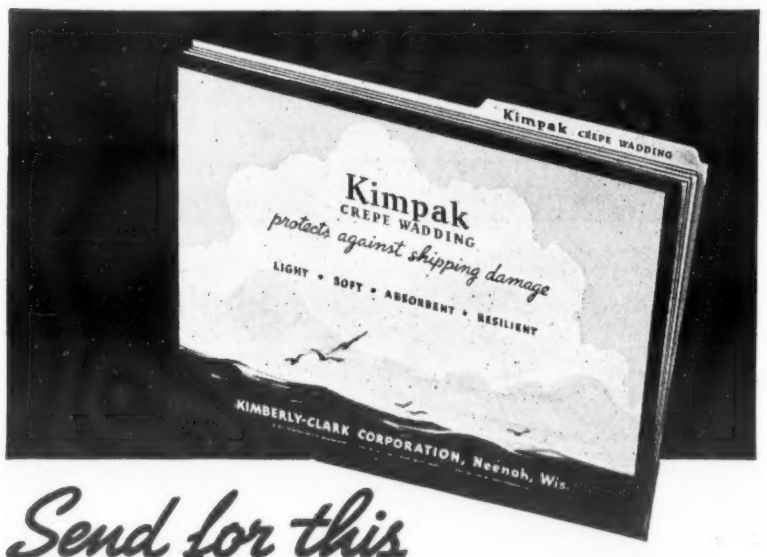
It is alleged that one White Plains dealer has already started advertising the now famous "$15 ice box trade-in" and is playing havoc with normal business done by electric refrigeration dealers in the same city.

According to Jack Cooper, White Plains dealer who is president of the Westchester dealers' association, when the announcement of the Electrolux campaign in the county first appeared, the matter was referred to the group's executive committee, and action will be taken at the meeting tomorrow night.

Several independent dealers stated that it is their belief that both electric and gas appliances can be sold under the same plan in the utility's territory, but that introduction of the new trade-in allowance will result in customer demands for cash discounts and other reductions long after the April campaign offer has expired.

"You'll never know this campaign is over if it is continued," said one dealer. "They'll come in here howling for ice box allowances until the cows come home."

Radio announcements of the Electrolux $15 trade-in on ice boxes were made Sunday evening through station WJZ in New York sponsored by Consolidated Edison Co.



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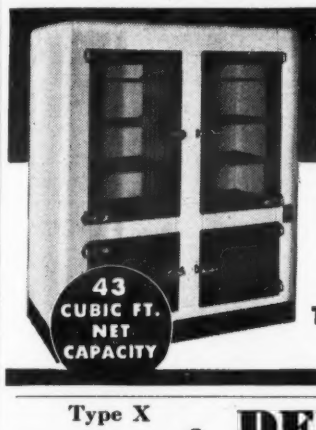

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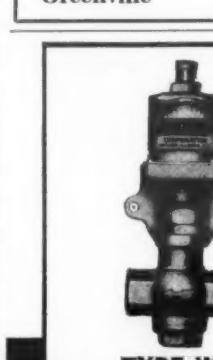
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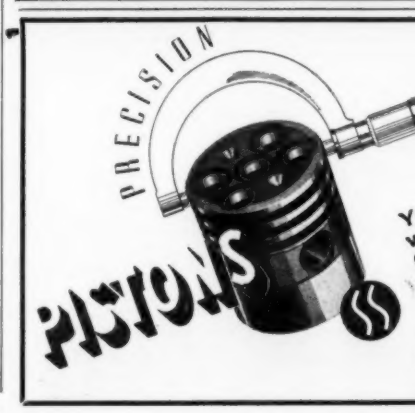

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IN TWO PARTS, PART ONE
TWENTY CENTS PER COPY

February Orders For Conditioners Are $4,830,746

Business Down 0.9% From January, But Doubles February, 1936

WASHINGTON, D. C.—Orders for air-conditioning systems and equipment (including conditioning systems, fans, and unit heaters) booked by 125 manufacturers totaled $4,830,746 during February, a decrease of 0.9% as compared with the $4,876,322 reported by the same companies for January, according to reports compiled by Director William L. Austin of the Bureau of the Census, Department of Commerce.

Orders booked during February, 1936, totaled $2,680,212, the figure for that month this year almost doubling that amount.

Total business for the first two

(*Concluded on Page 13, Column 1*)

RMA and ACMA to Meet May 12 at Hot Springs

HOT SPRINGS, Va.—Refrigerating Machinery Association and Air Conditioning Manufacturers Association will hold their annual spring meetings at the Homestead here May 12 to 15, inclusive, according to announcements made by J. M. Fernald, RMA president, and J. F. G. Miller, head of ACMA.

Both meetings will be two-day affairs, members of RMA convening on Wednesday and Thursday, May 12 and 13, with the ACMA conclave following on Friday and Saturday, May 14 and 15.

Discussion at the RMA meeting will center around the standardization program which the association has undertaken during the past year, while ACMA members plan a broad program of cooperation for the coming year.

Chicago Installations Total 48 in March

CHICAGO — Forty-eight installations of air-conditioning equipment were made in the Chicago territory during March, to bring to 110 the total for the first quarter of 1937, according to Commonwealth Edison Co. figures.

Combined capacity of Chicago first quarter installations was 5,786 hp., compared with 59 installations, totaling 3,246 hp., during the corresponding period of 1936. This is an increase of 86% in number of installations, and a gain of 78% in capacity, over the first quarter of 1936.

March installations totaled 48, with a combined capacity of 2,160 hp. or 1,687 tons of refrigeration, compared with 20 installations, aggregating 1,506 hp., contracted for during the same period of last year, an increase of 140% in number and 43% in total capacity.

Aggregate capacity of March's air-conditioning contracts was 9% ahead of February, 1937, the previous high month.

(*Concluded on Page 13, Column 2*)

Dale Parts to Handle Copeland in N. Y.

NEW YORK CITY—Dale Parts, radio distributor, has been appointed distributor of Copeland household refrigerators in the Manhattan territory, it was announced here last week. Appointment of Perry Metal Products Co., Brooklyn, as Copeland commercial refrigeration distributor in Brooklyn and Long Island also has been announced.

N. Y. Times Ruling Limits Use of Term 'Air Conditioned'

NEW YORK CITY—What may be the forerunner of a united move by metropolitan newspapers to standardize and restrict advertising use of the words "air conditioned" to meet definite requirements has been instituted by the "New York Times" advertising department in accepting copy from theaters, restaurants, and other public places purporting to have comfort cooling.

The "Times," according to Louis S. Berger, display classified manager, has set up a three-fold set of definitions to which air-conditioning equipment used by advertisers must conform before his paper will allow advertising statements to the effect that the establishment is "air conditioned."

These are: The theater, restaurant, or other place of business must possess equipment which (1) warms or cools the air; (2) humidifies or dehumidifies the air; and (3) circulates the air.

"The words 'air cooled' or 'air

(*Concluded on Page 13, Column 3*)

Fillbach Heads Milwaukee Home Conditioning Group

MILWAUKEE—Grover C. Fillbach has been elected president of the Residential Air-Conditioning Association of Milwaukee, an organization formed by local dealers to further the development of residential heating, ventilating, and air-conditioning.

Eugene Droegkamp was named vice president of the association, and Robert Evans, secretary. Directors are C. R. McCallum, Vernon Maurer, H. V. Porter, and Chad Randolph.

Air-conditioning installations have increased steadily since 1933, when but 10 jobs were reported, to a high mark of 45 installations during 1936.

Shopper Checks Code Violators In Kansas City

New Agreement Regulates Trade-Ins, Discounts, Price Marking

KANSAS CITY — Measures designed to end price-cutting, trade-in allowances on old ice boxes, and other objectionable trade practices have been adopted by the Electric and Radio Association of Kansas City.

The new code, formulated by a committee of which Gordon Buck of Household Utilities Co. was chairman, is intended to supplant last year's fair trade practice agreement, which became inoperative because of unwillingness of a few dealers to cooperate.

To insure adherence to this year's code, the association is employing a "shopper," who will visit each store at least twice a month and report any code violations to the committee, particularly with regard to ice box trade-in allowances, and discounts.

Actual purchases will be made from dealers who do not abide by the code, so that there will be definite evidence of such violations.

Violators will be called before the

(*Concluded on Page 24, Column 3*)

Price Maintenance Bill Passed by S. C. House

COLUMBIA, S.C.—A state fair trade bill, which would prohibit sale of any nationally advertised product at less than advertised or fixed price, has been passed by South Carolina's House of Representatives and has been given a favorable report by the Senate judiciary committee.

Gerlach Appointed General Manager Of Grunow Firm

CHICAGO—Appointment of Carl A. Gerlach as general manager of General Household Utilities Co. was announced last week by William C. Grunow, president.

In his new position, Mr. Gerlach succeeds Mr. Grunow, who will continue to act as president and director.

Mr. Gerlach, who was associated with General Motors Corp. for 20 years, comes to his new post from the position of assistant to the general manager of General Motors' Diesel engine plant at LaGrange, Ill.

Three new directors of General Household Utilities, elected last week, are: C. H. Scott, president of Haskell, Scott & Jennings, investment bankers; William Griffith, president of Griffith Distributing Co., Indianapolis Grunow distributor; and Herbert Lorber, secretary-treasurer of Rollins Burdick Hunter Co., insurance firm.

Other board members are Mr. Grunow, Allen G. Messick, and C. E. Whitehill.

In a letter to stockholders, Mr. Grunow announced that the company is developing a "revolutionary" principle in the home appliance field, and that it expects to place television sets on the market next year, after a long period of research and development work.

The announcements were made following arrangements for public offering this week of 50,000 shares of the company's 5% $10 par value preferred stock.

Brooklyn Group Holds Price Law Discussions

BROOKLYN—Electrical Appliance Dealers' Association of Brooklyn, Inc., has invited manufacturers and distributors of electrical appliances and radios in the metropolitan New York area to attend a series of luncheon meetings this week at which appliction of the Feld-Crawford fair trade law to various appliances will be discussed.

Schedule of meetings, all of which will be held in the Granada hotel, is as follows:

Monday, April 19—electric ranges; Tuesday, April 20—washers and ironers; Wednesday, April 21—electric refrigerators; Thursday, April 22—vacuum cleaners; Friday, April 23—radios; and Monday, April 26—small appliances.

District Representatives Named by Kerotest

PITTSBURGH—Willis A. Siegfried has been appointed factory representative in the southeastern territory for the Kerotest Mfg. Co., manufacturer of refrigeration and air-conditioning valves, fittings, and accessories.

Mr. Siegfried, who has been assisting Kerotest's New York City representative, K. M. Newcum, for the past year, will make his headquarters in Atlanta. He joined Kerotest's Pittsburgh headquarters sales staff about three years ago.

Albert H. Fine, who has been connected with the company's engineering and sales departments here for the past year, has been transferred to New York City to replace Mr. Siegfried.

Kerotest also has announced appointment of George R. Postlewait of St. Louis as factory representative covering Missouri, Kansas, western Nebraska, southern Illinois, western Kentucky, western Tennessee, and northern Oklahoma.

Mr. Postlewait started in the engineering department here seven years ago, and later became assistant purchasing agent. For the past two years, he has been assistant to G. C. Taylor, Chicago representative.

Officials Silent On Reports of Code Changes

Newspaper Says Revision Would Restrict Freon Use, Require Hermetic Units

NEW YORK CITY—Deputy Fire Commissioner Francis X. Giaccone, chairman of the Board of Hazardous Trades which is now preparing its recommendations on the new metropolitan refrigeration code, last week refused to deny or confirm a story published in the New York "World-Telegram" to the effect that the board was considering changes which would make Freon and Carrene refrigerants subject to the same safety requirements as others, and that the new code would require all household electric refrigerators and water coolers installed in New York City to be made with hermetically sealed units.

Recommendations concerning revisions in the proposed code will be made to Fire Commissioner John J. McElligot and the Board of Aldermen within the next few days, Commissioner Giaccone declared.

Final action on the code by the Board of Aldermen following the fire commissioner's report will climax almost two years of prolonged public hearings, during which influential refrigerant concerns have had representatives at each session of the Board of Hazardous Trades to promote their interests in formulation of the new code for New York City.

At the final code hearing open to

(*Concluded on Page 2, Column 2*)

No Court Action in N. Y. Gas Campaign

By W. H. Long

NEW YORK CITY—With Consolidated Edison Co.'s April campaign on Electrolux refrigerators at the three-week mark, dealer resentment against the utility's policy of $15 trade-in allowances on ice boxes continues high in the metropolitan area served by Consolidated Edison and its subsidiaries, Westchester Lighting Co. and Yonkers Electric Light & Power Co.

At headquarters of the Refrigerator Association of New York, representing metropolitan distributors of 10 refrigerator manufacturers and of which the utility is a member, Arthur F. Callahan, managing director, declared that reports that the association contemplated seeking injunctions to restrain Consolidated

(*Concluded on Page 2, Column 1*)

2-Month Georgia Power Appliance Sales Up

ATLANTA — Substantial increases in electrical refrigerator, range, and washing machine sales are reported by the Georgia Power Co. for the first two months of 1937, as compared with the corresponding period last year.

The utility sold 608 refrigerators, 494 ranges, and 172 washing machines in the first two months of the year. Sales last year were 210 refrigerators, 219 ranges, and 82 washing machines. Water heater sales did not come up to the 1936 figure, when 525 units were sold as against 362 this year.

Committee Opposes Wis. Anti-Utility Bill

MADISON, Wis.—The bill to prohibit public utility companies from merchandising electrical appliances, introduced into the Wisconsin Assembly early in the present session, has been returned with unfavorable recommendations by the committee to which it had been referred.

Electric Ranges Hard to Sell? With 9,635 Installations, 'No' Say Hartford Dealers

By T. T. Quinn

HARTFORD, Conn.—If you're one of those electrical appliance dealers who believes that the "period of public acceptance" for electric ranges hasn't arrived, come to Hartford—and learn different.

For they really sell electric ranges here. In fact, they've sold 9,635 ranges in the three years since 1934, when promotion really began in the grand manner.

More than that, there are now 1,355 all-electric kitchens in Hartford—and 313 electric water heaters were sold there last year.

The country over, comparative sales of electric refrigerators to ranges is about 7 to 1. In Hartford, it's about 3½ to 1. The city's always been a couple of points under the national average.

In 1934, ratio of refrigerator to range sales was about 5 to 1; in 1935, about 4 to 1 ; and last year the refrigerator ratio dropped another half-point.

The range increase wasn't made at the expense of electric refrigerator sales, either. Hartford's 1936 year in refrigeration was the best in the city's history, approximately 7,000 units being sold. But range sales came right along, too, with 2,700 units—and indications are that the two figures will be even closer this year.

When you say "electric ranges" in Hartford, you mean the Hartford Electric Light Co., for the utility company has been the guiding hand back of the campaign that picked up the range, nursed it along, and finally pushed it into almost a "must" position in Hartford homes.

In fact, some dealers think that in its enthusiasm, the electric light company pushed the electric range ahead a little too fast and encouraged too many operators to get into the field on a shoestring. But this feeling doesn't keep them, one and all, from having a warm word for the utility's work in making their selling job an easier one.

Handling range promotion for Hartford Electric Light Co. is Ray Gibson, and from him came the story of the utility's part in selling the Hartford homebody on the convenience, cleanliness, and cheapness of electric cookery.

Hartford Light Co. itself does no merchandising. Smartly, the utility removed itself from the selling side of the picture before the wave of utility-government skirmishing began, and devoted its efforts to building up load through helping dealers become more efficient.

Nub of the company's electric range promotion has been a "rental range" offer, under terms of which any person purchasing a range through a cooperating dealer (and just about all the city's dealers are cooperating) gets a year's free use of the appliance, with charges of only $1.30 a month if he keeps it after that period.

Also, the customer pays a wiring charge of $15 when the range is installed—this $15 being added to the price of all ranges sold under the rental plan—and, if he uses the appliance two years, that too is refunded by the utility.

If, instead of the rental range, the customer wants to buy a brand new electric range and have it installed, the dealer is authorized to deduct $15.60 from its selling price—the cost of one year's use of the rental range at $1.30 per month.

So by purchasing a new range in the first place, is is possible for

(*Concluded on Page 4, Column 1*)

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N. Y. Dealers Fear Public Education To $15 Allowance

(*Concluded from Page 1, Column 1*)
Edison from continuing its campaign were unfounded.

In New York City, one group of electric refrigerator dealers decried Consolidated Edison's advertisements of the $15 trade-in offer as a "come-on" by pointing out that $5 of the amount is allowed as a down payment, and that the remaining $10 is not allowed until the last instalment payment on the new Electrolux has been made. The utility's display window and floor promotion reads: "$15 For Your Old Ice Box."

Chief complaint against the utility's campaign from metropolitan dealers and their associations appears to be that they fear the $15 trade-in offer will result in a general public demand for similar allowances on ice boxes on purchases of electric refrigerators.

"We don't mind a utility campaign to create sales and load building," declared one dealer, "but already prospects are running into my store demanding $10 to $15 for their old ice boxes, which aren't worth a dollar for junk. When I tell them I can't do business on that basis, they point to the utility offer."

Meanwhile Consolidated Edison showrooms continue direct merchandising of Electrolux refrigerators at regular list prices, less the $15 allowance for ice boxes. No newspaper advertising on the campaign has been in evidence during the past two weeks, but several commercial "plugs" have been broadcast from New York radio stations.

The utility has instituted a campaign on sales of Apex vacuum cleaners as a combination offer in conjunction with the Electrolux deal.

At a meeting of 500 dealers called prior to announcement of the campaign, E. F. Jeffe, vice president of the utility, stated: "As you know, our company has been engaged in direct merchandising of gas appliances. Last year, I believe, our business on these amounted to about $5,000,000 . . . With the start of this April campaign on gas refrigerators we are also starting a move to increase our gas revenue $6,000,000 a year."

To qualify for participation in the campaign, each dealer must purchase at least one Electrolux refrigerator. No consignment deals are allowed, and the dealer must agree to maintain list prices and guarantee that connection of the gas refrigerator will be made by the approved licensed plumber nearest to the customer's home. Prices of such connections are standardized at $6 and $7.

N. Y. Officials Silent on Code Change Report

(*Concluded from Page 1, Column 1*)
the public, Deputy Commissioner Giaccone declared that the Board of Hazardous Trades was interested only in public safety in formulating the new code. He added that representatives of private interests had prolonged final action on the new measure by their "bickering" over code classifications of refrigerants flammability and irritability.

According to the "World-Telegram" story, changes under consideration would not remove restrictions on the older refrigerants, such as sulphur dioxide, ammonia, and methyl chloride, but would subject the Freon and Carrene groups to the same safety restrictions. A further provision contemplated was a requirement that all individual refrigerating systems, such as household refrigerators and water coolers, be made with hermetically sealed units.

Borg-Warner Approves Profit-Sharing Plan

CHICAGO—Stockholders of Borg-Warner Corp. met recently at Hotel Congress and voted to re-elect all directors, approve an employes' profit-sharing plan, and ratify a two-for-one stock split previously voted by directors.

In reference to a provision of $536,567 for Federal tax on undistributed profits, C. S. Davis, Borg-Warner president, stated that it had seemed advisable to withold a portion of the company's earnings this year.

"Our natural resentment of this tax should not sweep us off our feet and make us pay out dividends that would deplete our cash unduly," Mr. Davis declared.

Borg-Warner's net income for 1936, as previously published by the company, amounted to $7.13 a share, while dividends are at the rate of $1 a share quarterly, with an extra dividend of 75 cents in 1936. Total dividends for the year were $4 a share.

Taxes of all kinds, including excise taxes, amounted to $3,850,000, compared with $2,300,000 in 1935 and $1,150,000 in 1929.

Although net current assets were larger than a year ago, the ratio of current assets to current liabilities was only 2.64 to 1, one of the lowest in the company's history.

This was due in part, Mr. Davis explained, to large production and inventory at the end of the year, and to retirement of preferred stock.

Muncie Foundry Co. was acquired during the year, in addition to the United States Pressed Steel Products Co. acquisition previously announced.

Directors re-elected included Philip D. Armour, F. C. Ball, H. E. Blood, G. W. Borg, C. S. Davis, P. H. Davis, G. B. Dryden, J. L. Dryden, John Fletcher, J. R. Forgan, D. D. Francis, W. P. Hemphill, H. G. Ingersoll, Ray P. Johnson, Mathew Keck, Frederick D. Rose, and G. A. Shallberg.

Kitchen Bureau Offers $3,000 in Prizes in Planning Contest

NEW YORK CITY—A $3,000 nationwide model kitchen planning contest, open to the 15 top prize winners of local contests to be held in several cities throughout the country, is the spearhead of the 1937 promotional program planned by National Kitchen Modernizing Bureau.

Known as the "Plan Your Kitchen" contest, the drive is designed to encourage electric kitchen sales by having contestants submit miniature models of their own kitchens as they would look if completely electrified.

Only the winners of the first 15 prizes in similar local contests are eligible for the national awards, and each model must be accompanied by a letter of not more than 200 words on "Why I Want a Modern Electric Kitchen."

Fifteen national prizes, totaling $3,000, will be awarded. The contest opened March 1, and closes Nov. 1.

Aim of the national contest is to encourage operation of local contests, and to increase entries in these contests by making local winners eligible for national prizes.

Contestants must exhibit a model all-electric kitchen, consisting of three or four walls and the floor, together with models of kitchen electrical equipment and accessories. Equipment must be placed in the kitchen in accordance with the contestant's idea of the best arrangement.

According to the rules, the model kitchen must represent, to scale, the kitchen in the contestant's place of residence, or in a home or apartment under construction and owned by the contestant or some member of his immediate family.

For the use of the consumer prospect, a "kitchen planning kit" has been designed. Full instructions and cardboard items representing walls, furniture, and various electric appliances are included. Those items representing the walls and floor are so marked that they may easily be cut to the scale of the contestant's kitchen.

Submitted models will be judged not on physical appearance but upon these three major points:

1. Use of electric equipment in the kitchen.
2. Saving in footsteps and labor effected by the arrangement.
3. General excellence of the essay, "Why I Want a Modern Electric Kitchen," that accompanies the model.

In suggesting to local bureaus how they may tie-in with the contest, the national bureau recommends that contests run for not longer than 60 days, and that entry limitations be as simple as possible.

Extensive local advertising of the contest is advised, since the national contest will not be extensively promoted in this fashion.

Requiring contestants to go to a local dealer or the utility company twice—once for planning materials, next to submit the finished entry—provides double exposure to sales efforts, it is pointed out.

Norge Distributors Use Trailers in Promotion

DETROIT—Trailers made by Kabin Koach and Federal Motor Co. are being used by several Norge distributors to carry the Norge all-product message to outlying districts.

Interiors of these coaches may be turned into fully-stocked Norge sales rooms. Exteriors may be converted into traveling billboards.

Ludwig & Hommel & Co., Pittsburgh, and Radio Distributing Co., Detroit, are two distributors who have trailer units in operation.

5 Industry Dealers Exhibit At Shawano, Wis., Show

SHAWANO, Wis.—Displays of three firms featuring mechanical refrigeration and two exhibiting air-conditioning units marked the home show held here April 8-10.

Exhibitors in the refrigeration and air-conditioning fields were: Lutz Furniture Co., Farmers Hardware Co., Hoeffs Paint & Electric Store, Schweers Hardware Co., and Gehrke Sheet Metal Co.

WOLVERINE COPPER TUBING

GET IT AT YOUR JOBBERS

EASY *to* FLARE

WOLVERINE TUBE CO.

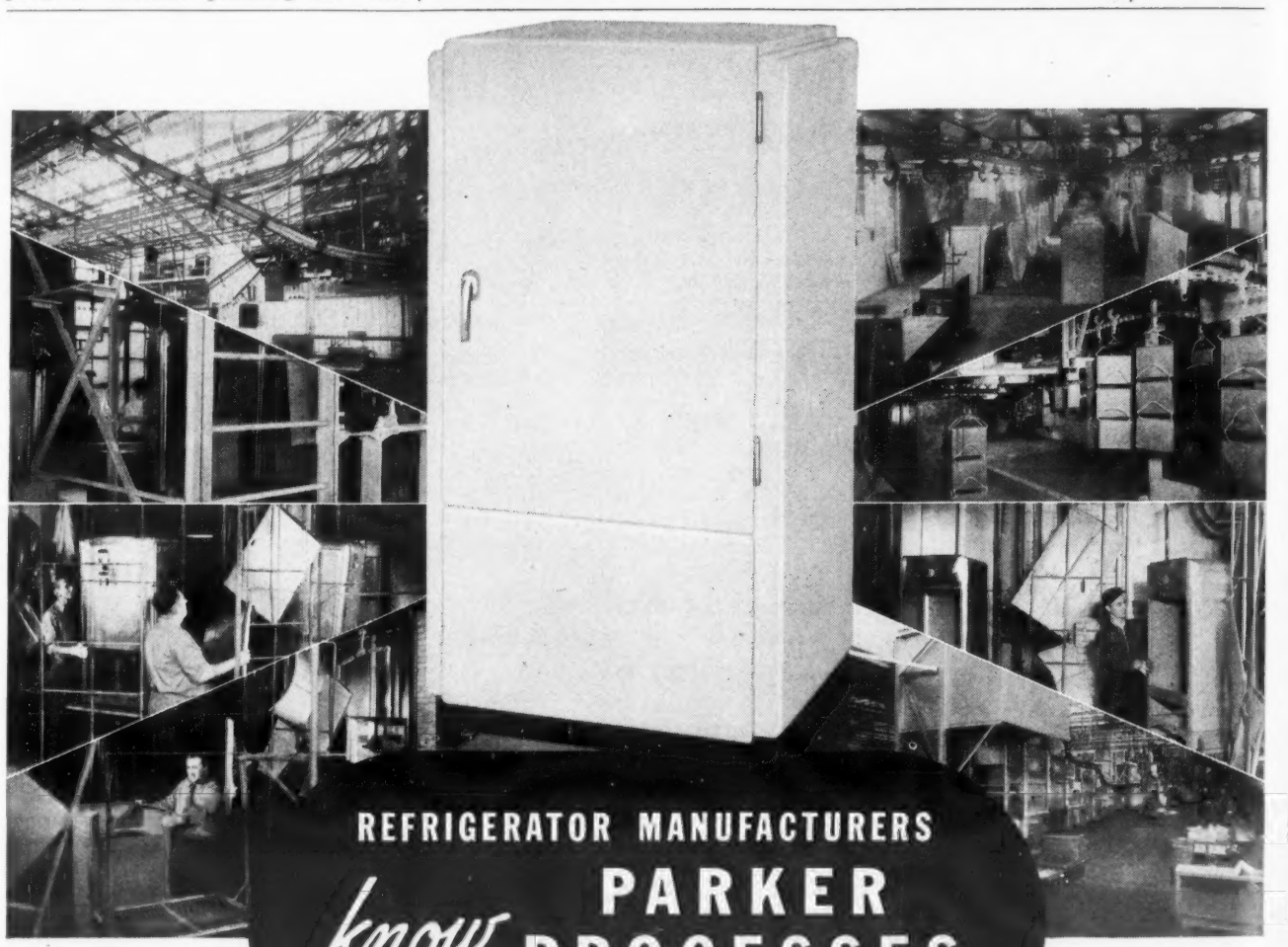
1411 CENTRAL AVENUE DETROIT, MICHIGAN

THE SEASON'S ON . . . PLAY BALL WITH THE ANSUL TWINS

THEY'RE ALWAYS SAFE

ANSUL CHEMICAL COMPANY

MARINETTE ❖ ❖ ❖ ❖ WISCONSIN

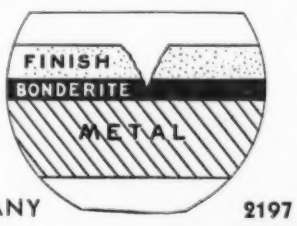


REFRIGERATOR MANUFACTURERS *know* PARKER PROCESSES *well*

All over the country, wherever refrigerators are made, manufacturers are adding the extra quality of Parker Bonderizing, one of the best known of the Parker Rust-Proofing Processes.

Bonderizing gives lasting beauty to refrigerator finishes. It produces an adhesive base and assures greater permanence for the final finish. It resists rust. It prevents chipping and peeling. It protects the finish and lengthens its life.

Parker Bonderizing provides refrigerator dealers and salesmen an outstanding quality feature, of interest to every refrigerator prospect. It has a definite, usable, sales appeal that can be turned to account in every demonstration. If your line is Parker Bonderized, be sure to tell your customers.



PARKER RUST-PROOF COMPANY 2197 E. Milwaukee Ave. • Detroit, Mich.

Ask for These Books

For more than 22 years, this company has devoted its entire time, talent and energy to the improvement of rust-proofing methods. New books describing the Parker Processes are available to manufacturers and technical men. Send for your copies.

PARKER *Processes* CONQUER RUST

BONDERIZING • PARKERIZING

The

C.I.T.

BUDGET PLAN

C.I.T.

NOTE TO DEALERS: Tie in with C. I. T. to get your full share of the good will C. I. T. advertising and promotion are building for you. Easel-back cards of this design for show window or counter use (16″ x 22″)—also wall or window posters, and other selling aids are available at the C. I. T. local office nearest you. Our 160 local offices are there to help you.

C. I. T. Corporation
Unit of Commercial Investment Trust Corporation.

PROTECTS THE TIME BUYER

— WHAT DEALERS ARE SAYING & DOING —

Hartford Utility Pushes Electric Range Sales with Unusual Rental Plan

(Concluded from Page 1, Column 3)

a customer actually to get a reduction of $30.60 in the range's price—$15.60 for the year's free use, not taken advantage of by the customer who passed up the rental range, and another $15 rebate on the wiring, after the appliance is in use two years. If his house is already wired for a range, he gets the $30.60 in one lump.

All the rental ranges are furnished by the utility, and they are rentals only—they can't be bought at any price.

Dealers are permitted to put them on their sales floors, and to install them, for which the utility pays them a bonus. Also, the dealer receives $15.60 at the outset for the rebate he makes to the purchaser who takes a new range instead of a rental.

The range offer is limited in only one respect—it applies to one, two, and three-family houses with standard overhead electric service only.

In another improvement on its original offer, the utility offered a trade-in allowance of $15 on any old stove turned in on a new range. The stove might be kerosene, gasoline, gas, or coal—it didn't matter.

This naturally led to some difficulty. A few anxious dealers were digging up junk stoves for their prospects, so that they could buy a new range more easily—and of course the utility didn't like that.

The utility junks all old ranges turned in, and in a few cases it was found that dealers had bought up these junked units and were turning them in again on new range sales. Not being anxious to buy an old range twice, even for junk, the utility finally made this prerequisite to the allowance: the device must actually have been used in the home.

But what about these rental ranges? With a year's free use, only $1.30 a month rent to pay after that, free service and free replacement, wouldn't it be cheaper for the customer to keep on using the rental, and never buy a range?

It might—if the range were the same as standard makes. But the utility has seen to it that it isn't.

Made to order for Hartford Electric Co. (by Electromaster), and bearing the name "Hartford," the ranges furnish electric cookery—but are without several convenience features that go to make the electric range a real household asset.

The oven is 14 inches wide—ample, but not too much so. There's no appliance outlet—for the toaster, the percolator, the small grill, etc. And there's no connection for an electric timer clock.

In other words, the rental range is supposed to whet the user's appetite for a standard range, with all its added conveniences. And that, the utility claims, is what it has done.

How Financing and Lowered Electric Rates Help

Financing was made so easy as to be almost unnoticeable—terms could be extended to 48 months through either C. I. T. or the Electric Home & Farm Authority.

Rates were staggered to encourage volume use of current. For instance, where the lighting load does not exceed ⅓ kilowatt, first 10 kwh. cost 10 cents each; next 15 kwh., 5 cents each; next 200, 2.7 cents each; and all over 225 kwh., 1.5 cents each.

Since Dec. 1, 1935, a new "electric home" rate has been available to volume users. For the first 15 kwh., the cost is 10 cents each; for the next 150 kwh., 2½ cents each; for the next 100 kwh., 2 cents; and for all over 265 kwh., 1½ cents each.

Customers jump from one schedule to the other, depending on the amount of current they use during any one month, with their use of current during that month in 1934 the determining factor.

If a customer uses more current in July, for instance, than he did during July, 1934, he's on the "electric home" rate for all his current during the month. If he drops below the 1934 "scratch" during August, he's back on the regular rate schedule.

In promoting the "electric home" rate, the utility points out that its 2½ and 2-cent rates for volume use are comparable to those in the Tennessee Valley—and shrewdly suggests that an extra appliance will permit use of considerable additional current without additional cost, under the preferred rates.

Other utility promotion literature, using the theme "Electricity is Cheap in Hartford," shows just how little it actually costs to operate several appliances by listing names of customers in various parts of its territory, the size of their families, what appliances they use, and their total electric bill for an average month, April.

Most of the utility's appliance advertising is of a general promotional nature. On ranges, the convenience and comfort of electric cookery is stressed, together with the fact that this modern cookery costs no more than earlier, less efficient methods. No product names are mentioned.

In its showroom, the utility maintains a complete display of all electric ranges handled by Hartford dealers. These include General Electric, Hotpoint, Kelvinator, Norge, Westinghouse, Electromaster, Standard, Crawford, L & H, Monarch, and Universal.

Utility home service workers instruct new range owners in the use of the appliance, suggest menus, and are always on call for every cooperating dealer's use. Spring and fall cooking schools are held, in which dealers cooperate with displays.

In addition, the company holds an annual "Electrical Progress Month," usually during November and December, in which a drive on both small and large appliances is made for the Christmas season.

Just recently, the utility has started a special campaign on electric water heaters, in connection with which it offers a "night rate" of 1 cent per kwh. to customers using the appliance.

Water-heater users have two dials, one for regular use, the other for water heaters only. A time clock switches the meter from "regular" to "water heater" dial from 11 p.m. to 7 a.m., when the line load is lightest. All current recorded on the "night" dial is billed at a straight 1 cent per kwh.

Appliance Council Backs Range Merchandising

Guiding force behind much of Hartford's success in electric range merchandising is the Electric Appliance Council of Hartford, an organization of about 30 dealers whose aim is the promotion of good trade practices through cooperation. Originally the association was the utility company's idea, and for some time organization was actively concerned in its actions and decisions.

With things moving along under their own steam, however, the company withdrew from active participation in the Council's affairs, and now holds an honorary membership in the group, serving in more of an advisory capacity.

The Electric Appliance Council sets up policies for its members on all major electrical appliances, plans cooperative advertising campaigns, and discusses with the utility company any drive in which the two are working together.

In the case of electric ranges, the utility and the Council decide which dealers shall come in under the rental range and financing plans, how cooperative displays are to be arranged, and other necessary details.

F. L. Cashman, head of the appliance department of the G. Fox Co. department store, is president of the council this year, and Norman McCurdy of Flint-Bruce Co., another department store, had the post the year before.

"The electric range situation in Hartford is a very fortunate one," Mr. Cashman told me in the few minutes I was able to get with him between his rushes out onto the sales floor, where the first spring refrigerator showing was being readied.

"Hartford Electric Light Co.'s promotion work has brought electric ranges to a much higher point of acceptance here than in many other cities," the department store man added.

"There's been one major drawback, however. In an effort to get people to believe that electric ranges are commonplace, the utility has given its rental ranges to places all over town.

"As a result, there are too many small dealers in the field at present—dealers who don't know the meaning of overhead and profit margins, and who, consequently, are not equipped to do any kind of a good job.

"Encouraged by the utility, many small stores got into the range business on nothing more than a shoestring. To keep their heads above water, these places must sell on a more "favorable" basis than the larger business outlets.

"So many of them have cut prices, monkeyed with the utility's trade-in range proposition, and generally made things tough for those others of us who have to show a fair profit to stay in the field."

Both the utility and the Council, Mr. Cashman said, recognize the dangers inherent in such a situation, and are planning to do something about it soon. One thing he thought would go a long way toward solving the problem would be for the utility to place restrictions on its rental range and financing cooperation.

If dealers had to meet certain conditions to qualify for utility cooperation, Mr. Cashman believes much of the present unhealthy selling practices would be eliminated.

"You can imagine just how far this price-cutting situation might go," he declared, "when you realize that about eight dealers sell 70% of the electric ranges merchandised in Hartford.

"The rest of the dealers are in-and-outers—willing to get their business where and when they can, and willing to go to almost any lengths to make a sale. If they can sell 15 ranges a year, most of these dealers are happy."

G. Fox Co. opened its range department last August, and now handles General Electric, Hotpoint, L & H, and Universal products.

The company's showroom is made attractive with nested range displays in the center, refrigerators flanking the outsides, and a model electric kitchen as the back piece integrating the two appliances.

Sole use of the kitchen is as a showpiece, Mr. Cashman told me. No demonstrations or cooking school are held in the store.

"There'd be too much crowding of the floor during rush hours," Mr. Cashman explained. "Besides, too many cooking schools might hurt instead of help.

"Hartford Electric Light Co. has cooking schools regularly every year, and the public gets a chance to learn all the new wrinkles and see all the new appliances in use there. Our demonstration couldn't be as effective as theirs. So why put one on?"

Knoderer Planning on Good Share of Business

Although he had warm praise for Hartford Electric Light Co.'s part in building up range sales in the Hartford territory, W. H. Knoderer of General Electric Supply Co., Hotpoint distributor, admitted that his company, as yet, had done little about it.

"We handle so many appliances here, large and small," Mr. Knoderer said, "that up to the present we've had little chance to push ranges, or any other one product.

"But we have sold some ranges. And I do know one thing—range business in Hartford is very much better than in our four other branch stores in Connecticut."

The company does no retailing itself, and operate seven branch supply stores in the territory covered out of Hartford. As a supply outlet only, it previously has had nothing to do with merchandising campaigns.

"With electric range acceptance helped along so much by the utility here, it does seem a shame that something more isn't done about it. We've been inactive in the past, but this year we plan to really step out," Mr. Knoderer said.

(*Editor's Note*: Further details of the Hartford electric range promotion and how individual appliance dealers tie in with it will be told in a forthcoming issue.)

PORCELAIN ENAMEL IS ENDLESSLY CLEAN

PORCELAIN ENAMEL IS ENDLESSLY SANITARY

PORCELAIN ENAMEL IS ENDLESSLY DURABLE

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. . . for ALL : manufacturer, dealer and customer

DURABILITY PORCELAIN ENAMEL Fused on Metal

PORCELAIN ENAMEL INSTITUTE, Inc.
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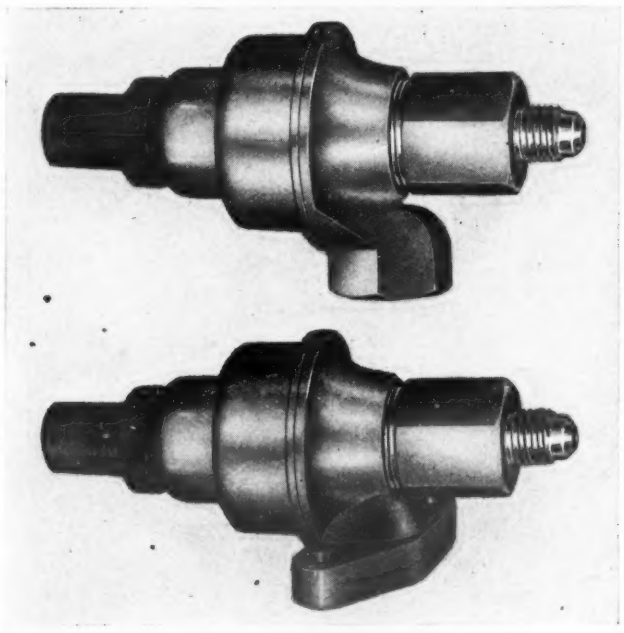
STANDARD REFRIGERATING APPLIANCES

New Valves

SMALL IN SIZE . . .
. . . BIG IN PERFORMANCE



TYPE "F"
AUTOMATIC EXPANSION VALVES

These valves are especially designed for the smaller units—domestic cabinets—beverage coolers—water coolers—room coolers—ice cream cabinets. Bodies of these valves are hot pressed die forgings, close grained and non-porous. The springs are extra length for smooth, velvety adjustments. Needles are special alloy, adaptable for any refrigerants. The breather cap is of live rubber with threaded metal insert. And these are just a few of the many outstanding construction features of these superior valves. No. 1582, ¼" S. A. E. inlet—¼" F. P. T. outlet. No. 1583, ¼" S.A.E. inlet—1¾" bolt centers. Type "F" valves are interchangeable with all refrigerants except ammonia.

Write for bulletins on the complete line of Blue Ribbon Appliances.

AMERICAN INJECTOR COMPANY
RILEY ENGINEERING CORP. *Associate*
1481-14TH ST. • Phones LAFAYETTE 0350-0552 • DETROIT, MICH

Electrical Association Formed in Birmingham

BIRMINGHAM, Ala.—Local electrical manufacturers, distributors, dealers, contractors, and utilities have cooperated to organize the Electrical Association of Birmingham. D. B. Clayton, Knight Electric Co., was elected chairman; Ed Henley, vice chairman; and D. S. Richard, Birmingham Electric Co., secretary-treasurer.

D. S. Richard and R. P. McDavid were named chairmen, respectively, of the finance and publicity committees.

Members of advisory councils for each of the cooperating branches of the electrical industry were:

Manufacturers, R. T. Brooks and Walter Ballew; distributors, C. R. Matthews and Ed Henley; dealers, Jack Evans and W. L. McAllister; contractors, D. P. Clayton and Clyde Dyer; and utility men, D. S. Richard and Barney DeRamus.

Pittsfield Retail Appliance Salesmen Organize

PITTSFIELD, Mass.—A new association for promoting clean competition and good fellowship was recently organized by retail electric appliance salesmen in Berkshire county at a meeting in Electric theater. Organization name will be chosen and by-laws framed soon, it is reported.

Officers were elected as follows: president, Raymond F. Coakley; vice president, William R. Prodgers; secretary, Ted Kane; and treasurer, Russell E. Clarke.

O'Neill to Sell Frigidaire Line Exclusively

BALTIMORE—O'Neill & Co., department store, has taken a franchise to sell Frigidaire exclusively, and has dropped all other refrigerator lines, including the A.M.C. "brand" line it formerly handled.

Cecil Morgan, formerly in the refrigeration division of Hochschild, Kohn & Co., department store, has been appointed manager of O'Neill's electrical appliance division, succeeding Richard Willis, who resigned some time ago to enter business for himself.

Dayton Sales Up 87% over 1936 for First Quarter

BUFFALO—Sales and production of Dayton refrigerators for the first quarter of 1937 have shown an increase of 87% over the same period for 1936, according to E. A. Munschauer, president of Heinz & Munschauer, firm which manufactures the Dayton refrigerator.

The increase, says Mr. Munschauer, is due partly to the increased sales of private-brand refrigerators by department stores and other large retail outlets.

Oscar Brown to Distribute Kelvinator in Asheville

ASHEVILLE, N. C.—Oscar Brown Motors has been appointed Kelvinator distributor in this territory, according to Oscar Brown, president.

The firm's Kelvinator division will be under the direction of Eugene Coston. Thomas N. Owen will be sales manager.

Palace Dept. Store Opens Appliance Section

MONROE, La.—Palace Department Store here has opened an appliance department handling Kelvinator refrigerators and ranges, RCA-Victor radios, and ABC washing machines.

B. Brammer, formerly district representative for two major refrigerator manufacturers, heads the new department.

North Riverdale Shop to Retail F-M Appliance in Dayton

DAYTON—North Riverdale Appliance Shop, 2214 N. Main St., opened here recently, handling Fairbanks-Morse refrigerators, washers, ironers, and radios. Walter Goode owns the store, and William George is manager.

Briggs Appoints Distributor For North Carolina Area

ASHEVILLE, N. C.—Outboard Motor & Refrigerator Co. has been appointed dealer for Briggs electric refrigerators in the western part of the state.

A-P Thermostatic Expansion Valves are easily and quickly disassembled for inspection and cleaning.
AUTOMATIC PRODUCTS COMPANY
2431 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN

What Are You Doing with Your 12,887,774 Prospects?

According to figures published in Electrical Merchandising and Air Conditioning and Refrigeration News, there are almost 13 million wired homes without electric refrigeration.

How are you going to sell these homes?

If you are handling a Dry-Zero insulated refrigerator, you have one of the best of selling stories to give them. ***Economy of operation and long life.***

Any refrigerator is cheaper to run if it has Dry-Zero Insulation than it is with any other material. This is because, first: Dry-Zero Insulation is the most efficient commercial insulant known, even when bone dry. Second: Dry-Zero Insulation is the only commercial insulating material that is unaffected by the moisture that gets into the walls of every refrigerator in use.

Wet insulation cannot keep heat out. The unit is forced to run longer and longer to maintain a safe refrigeration temperature. This takes more and more current, and finally it is difficult to secure a safe, preserving temperature in the box.

That is why we say a Dry-Zero insulated refrigerator will save from 20c to $2.00 per month in running costs—depending on the age and size of the refrigerator. As the size and age increase, the saving also mounts.

If you want the complete story of how Dry-Zero Insulation saves in cost of operation, write for copies of a colorful folder which you can give to your prospects. Use this folder to help you crash this big market that still remains right at your finger tips.

DRY·ZERO INSULATION
REG. U.S. PAT. OFF.
The Most Efficient Commercial Insulant Known

DRY-ZERO CORPORATION

222 North Bank Drive
CHICAGO

687 Broadview Avenue
TORONTO

New Jersey Dealer's 'Showroom on Wheels'

With this touring sales unit, A. J. Orbach, Inc., Frigidaire dealer in Plainfield, N. J., has taken refrigeration to homes on every street in the town and surrounding communities. The trailer is a Pierce-Arrow attached to a Packard 120, which Orbach's also sell around the corner from their refrigeration store. Victor H. Crooks, sales supervisor, stands beside the unit.

—PROFITABLE SALES METHODS—

Orbach's Tests Idea of Taking Showroom To Customer with New Trailer Unit

By W. H. Long

PLAINFIELD, N. J.—"When the customer doesn't come to the display room, take the display room to the customer."

That's the motto of A. J. Orbach, Inc., local Frigidaire dealer, who last month sent out his new "showroom on wheels" to cover this prosperous suburban New Jersey community and surrounding smaller towns on the slopes of the Watchung Mountains.

Located in a spacious store at 415 Park Ave. here, the Orbach company has been selling refrigeration and household appliances for a decade.

The new trailer unit is a Pierce-Arrow silver-colored job attached to a Packard 120 coupe. Orbach sells Packards around the corner from its Park Ave. refrigeration and appliance store, and thus couples up its two types of products in a single effective demonstration unit.

Inside the trailer are two Frigidaire 5-cu. ft. boxes and 6-cu. ft. size, all three in operation, besides a demonstration oil burner, an electric range, and a washer from lines the dealership also handles in the Plainfield territory. It is roomy, comfortable, and well-lighted and affords the prospect an opportunity to approximate kitchen conditions in the street in front of her home.

According to T. H. Fulton, store manager, the trailer unit visits all parts of Plainfield, North Plainfield, Netherwood, Fanwood, Dunellen, and other nearby communities, and is sent out to territory served by the A. J. Orbach company's branch stores in Newark, Elizabeth, and East Orange.

The eight outside salesmen employed by the Plainfield outlet take turns in running the trailer unit, working in sets of four. General procedure is to take one prominent residential street or series of streets, and approach every housewife in the block. When one or more will leave their housework to visit the trailer, she is taken inside and shown the three Frigidaires and the other lines demonstrated.

While one salesmen drives the trailer from block to block following his three colleagues "working" houses along the way, these men ring doorbells and ask housewives to step out on their porches and take a glance at the striking looking outfit to induce prospects to step inside it, says Mr. Fulton.

Although officials of the Orbach company are reluctant to set a comparative value on the efficiency of trailers in relation to other sales methods—because their unit has only been in use a month—they agree that the "showroom on wheels" is creating considerable interest in the Frigidaire line and definitely has produced several sales.

For its showroom business, the Plainfield dealership uses straight canvassing and newspaper advertising to secure floor traffic and leads.

Despite its rating as one of the wealthiest suburban commuter towns within a 50-mile radius of New York, refrigeration sales appear to be progressing at a very slow rate in other outlets in Plainfield. Home Service Appliance Co., a G-E store, and the Dann Co., handling Westinghouse, do the majority of local refrigeration sales along with A. J. Orbach, Inc.

Plainfield literally is "packed" with furniture stores on Front St. and Park Ave., the main business thoroughfares. About half of these handle various lines of refrigerators, but none seem to be doing much business. Floor traffic around refrigerator displays is almost nil.

One furniture dealer who has handled electric refrigeration in the town for three years stated that his type of store is handicapped by an overabundance of time payment business, about 75% of which finance companies refuse to accept as risks.

Another furniture dealer was found dismantling his window display of '36 models of a prominent line.

"We're on the fence," he said. "I'm clearing these out, and I don't know what we'll do in the future. I like selling refrigerators, but this town is running over with them. We furniture men just seem to be out of the picture these days."

Joslin's Uses Daily Cut on Picture Page

DENVER—When the *Rocky Mountain News* started a daily news-picture page, Joslin's department store, Frigidaire dealer, contracted for space in the lower-right corner for a daily advertising picture. Recently the store ran in that space a photograph showing how easily ice cubes are extracted from 1937 Frigidaire ice trays.

"Pop Goes the Ice!" as the picture was entitled, showed an attractive young woman demonstrating the "dice cube release" to her round-eyed niece. To lend authenticity, the true names of both people were used.

Except for "Adv." following the picture's short text, the photograph was indistinguishable from the straight news pictures on the page.

New Dealer Offers Coal as Premium with Appliances

MERIDEN, Conn.—Something unique in opening "specials" is the offer of ½ ton of coal for each $50-or-more and 1 ton for each $100-or-more purchase of electrical appliances made by Meriden Grain & Coal Co., General Electric and Norge dealer here.

For display of appliances, fuel, and farm supplies, the company has opened a new showroom at 41 S. Colony St. The two upper floors are devoted to storage and service.

Clair L. Huse and John W. Hogan head the concern, and Raymond Burke is sales and service manager. The business was purchased from Meech & Stoddard, Inc., of Middletown, Conn., a year ago.

Sales from Employe Tips Show 38% Increase for 2 Months

NEWARK—Appliance sales made during January and February as a result of leads turned in by non-selling employes of Public Service Corp. of New Jersey showed an increase of 28.3% over the corresponding months of 1936.

REFRIGERATORS
1 or 100 AVAILABLE
ALL SIZES—ALL MAKES
$7.50 TO $15.00
•
SEND FOR COMPLETE LIST
GEO. W. FAWCETT
2031 CALUMET CHICAGO

Six-Month Norge Dealer Finds Years of Experience No Requisite to Success

NEWARK—Years of experience aren't necessarily a prerequisite for building up a good sales volume in a short time. So runs the story of Ed Morris who opened up National Appliances, Inc., Norge dealership here less than six months ago, and within a few months was doing a business that ran into five figures.

Mr. Morris had been in the appliance selling game for only five months when he decided to go into business for himself. Although his resources were limited, the store which he opened is among the largest appliance shops in the city. It is stocked with a complete line of Norge appliances.

Next to personal aggressiveness, Mr. Morris' policy in regard to manpower probably warrants a lion's share of the credit for his achievements to date as an appliance dealer. Within three weeks after his store was opened, he had an organization of 40 salesmen in the field.

When acting as his own personnel manager, Mr. Morris spends hours in interviewing men; after they are hired, he spends days training them how to sell.

His method of getting new salesmen is to advertise that he will pay small salaries for canvassers or for floor salesmen. Then when an applicant comes in, he builds up his interest in sales work, and unsells him on the idea of working on a salary basis and making $10 or $15 per week, by pointing out the possibilities which the salesman who does a real selling job has for earning as much as $50 per week on a commission basis.

With such a large sales force, time spent on the salesroom floor is at a premium. Capitalizing on this fact, Mr. Morris has worked out a plan by which each salesman is assured of receiving some compensation each pay day.

The breakdown of the plan is that men on floor duty receive 8% commission on sales in place of the usual 10%, and the remaining 2% is put into a kitty which is split up among the members of the entire sales organization.

The system by which Mr. Morris directs the work of his 40-man sales organization has been to appoint key men as supervisors in charge of salesmen. The supervisors overwrite the business of their crews.

Sales meetings held each morning at 8:30 serve to bring the men together at National Appliances, Inc. Each morning small prizes consisting of $1 in cash, or several packages of cigarettes, are drawn for. Only those salesmen who are checked in at 8:30 are entitled to draw for the prize.

Traffic-pulling promotions which Mr. Morris has used include store and window demonstrations, home economic schools, and theater tie-ins.

He is also a firm believer in newspaper, radio, and direct mail advertising, and the use of trailers, to stimulate refrigeration sales.

FOR SERVICING ICE CREAM CABINETS AND DAIRY COOLERS

Artic
REG. U. S. PAT. OFF.
(DU PONT METHYL CHLORIDE)

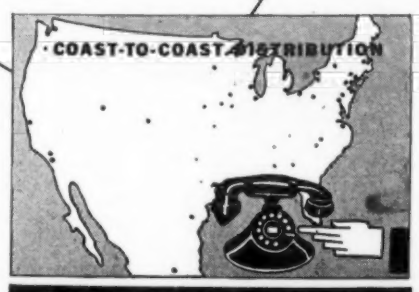
ARTIC is the preferred METHYL CHLORIDE for service work

PURITY . . . LOW MOISTURE
LOW ACIDITY GUARANTEED

IT'S the Methyl Chloride used by leading manufacturers for the original charge. In recharging the Methyl system it's safer to use ARTIC because of its guaranteed purity, low acidity and low moisture content. You can depend on its uniform quality. Easy to get on short notice because it's stocked in standard containers in principal cities.

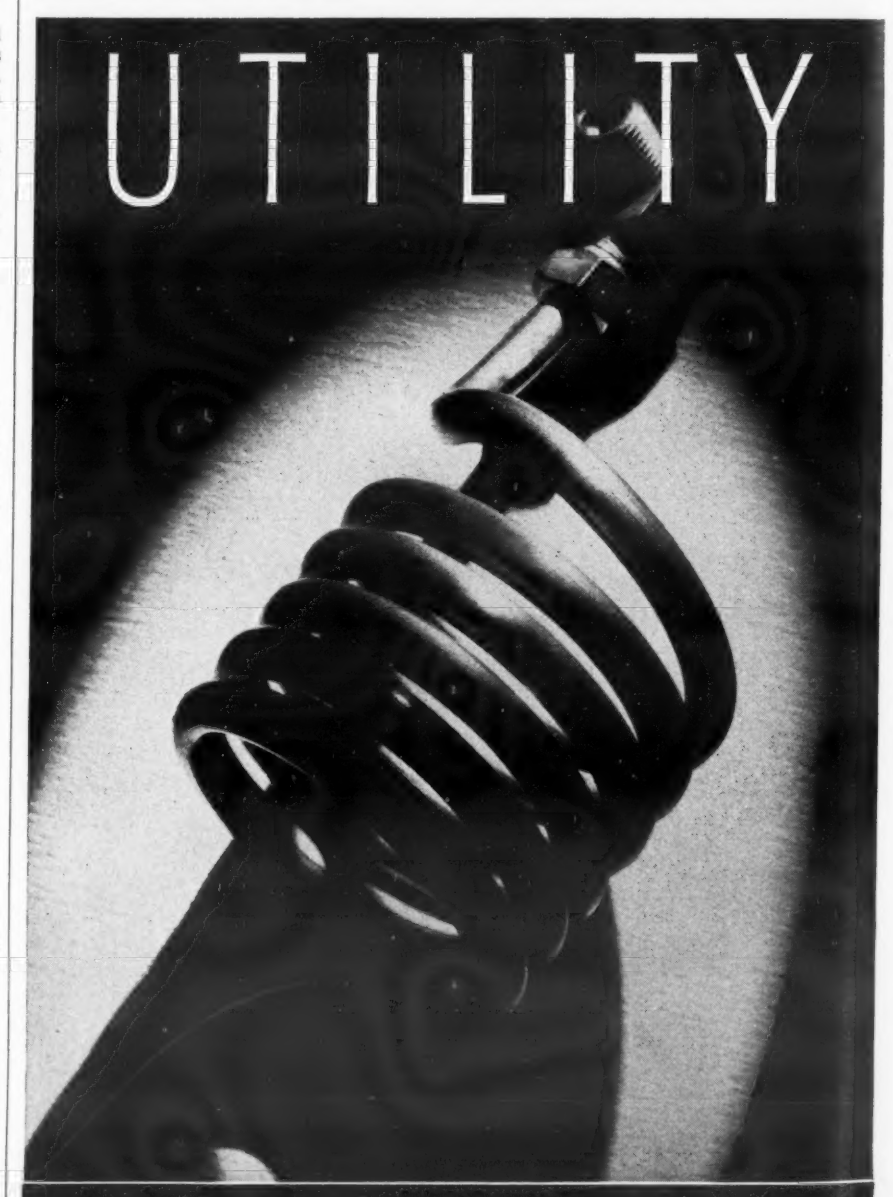
ARTIC is widely used for ice cream and dairy work because it is the dependable, quick-cooling and quick-freezing refrigerant, operating efficiently at positive pressure to give controlled low temperatures.

DU PONT
REG. U. S. PAT. OFF.



E. I. du Pont de Nemours & Co., Inc.
The R. & H. Chemicals Dept.
Wilmington, Del.
District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

Artic—THE PREFERRED METHYL CHLORIDE FOR SERVICE WORK



Bundyweld Tubing

BUNDY Tubing is furnished with or without fittings, either completely fabricated or in lengths for your own fabrication. A wide range of sizes makes Bundyweld adaptable to a great variety of uses in the rigid tubing field. • We will gladly quote from your blue prints or samples.

BUNDY TUBING CO.
DETROIT, MICHIGAN

To the woman in the home —

AIR CONDITIONING *Means* COMFORT COOLING

WHEN the woman in the home thinks of "air conditioning" she thinks of cool, comfortable rooms in summer time. She thinks of comfort and health of the family when the thermometer climbs to intolerable heights. To her "air conditioning" means first floor rooms that are delightfully cool and restful during hot summer days and upstairs rooms that are properly cooled to assure peaceful sleep at night. To her it means relief from dreaded "heat waves" and assurance of the luxury of summer comfort.

To her, "air conditioning" means cooling and dehumidifying. To her, unless it peforms the function of cooling during summer months, it just isn't "air conditioning."

As long as she can remember, since she was a little girl, the home was always heated in winter. During recent years it has become possible—and desirable—to cool the home in summer. This is the general impression regarding "air conditioning."

To most people "air conditioning" is synonymous with comfort cooling. Millions of people enjoyed their first experience with "air conditioning" in theaters which were cooled during warm weather. This first impression has been strengthened by the further widespread adoption of summer cooling in restaurants, retail stores, specialty shops, hotels and passenger trains—all publicized as being "air conditioned."

Air conditioning in the home is gathering momentum upon the central thought of cooling and dehumidifying which was developed in, and is supplied by the refrigeration industry. Refrigeration men, distributors and dealers, are most logically equipped by past experience and training to render this all-important service to the public. To this group of business men the manufacturer of "air conditioning" equipment may well look for his most resultful sales outlets and this group can be reached effectively and at low cost through the weekly issues of "The Newspaper of the Industry."

AIR CONDITIONING AND REFRIGERATION NEWS
5229 CASS AVE., DETROIT, MICHIGAN

Representatives: John B. Gallagher Co., Incorporated, 11 West 42nd Street, New York, New York . . . . . Lewis & Noelle, 612 North Michigan, Chicago, Illinois

AROUND THE WORLD WITH GEORGE F. TAUBENECK

Germany was next-to-last stop on Editor Taubeneck's seven months' trip around the world, and he spent a little more than two weeks there, gathering information on German refrigeration manufacturers.

Partly because the German people are scared to talk, and partly because the editor feels that conditions there today are neither representative of the past or indicative of the future, the section of the "World Series" on Germany will be confined largely to a study of German refrigeration products.

Notes on the country itself and the people will be held to a minimum. Pictures taken with his Contax will tell the human interest story.

Bitter-Polar

(Continued from Last Issue, Page 15, Column 1)

5. Bitter-Polar-GMBH Limited Liability Co.-Kassel.

Trademark: Bitter-Polar.

Hermetically sealed compressor-motor-aggregate, oscillating pistons, compressor and rotary current motor directly connected, air-cooled condenser, overflow evaporator (damper) with floating regulator, direct evaporation, refrigerant: sulphur dioxide; with continuous current a transformer is necessary.

Size of cabinet (netto):

60 100 150 300 Liter

Expenditure of current

0.75, 1.00, 1.50, 3.0-3.5 kwh. per day.

All cabinets are equipped with sectional cooling, so that several varied temperatures may be maintained at one time and all foods may be cooled according to particular use at the same time. This sectional cooling is arrived at by special building of the layers of shelves. As a specialty this company features the Bitter-Polar-Coolstove, an appliance that combines cooking and refrigeration. Besides the three or four plate burner and the refrigerator, this appliance also contains an oven for baking. Refrigerator and stove are separated by special insulation and air flow.

* * *

Borsig

6. A. Borsig, Machine Making. Joint Stock Co. Berlin-Tegel.

Trademark: "Borsig."

Stationary, simple working capsuled two-cylinder compressor, oscillating pistons, roller bearing, sliding ring piston rod, condenser water-cooled or air-cooled, lying and standing bundle pipe damper, steep-pipe evaporator, direct evaporation, smooth or ribbed pipes with fluid refiner.

Hand regulation or automatic by floating regulator in the evaporator or condenser, or by an expansion valve, regulated by compression-pipe temperature. Refrigerant: ammonia, sulphur dioxide, or methyl chloride.

* * *

Bosch

7. Robert Bosch, Joint Stock Co., Stuttgart. Trademark: Bosch.

Refrigerator, 60 liter capacity, cylindrical construction with compression-cool aggregate, rotation compressor, directly joined with short circuit motor of 1/10-hp. and 1450 n/min. Cold production 75 kilogram calories an hour, hermetically sealed.

Refrigerant: sulphur dioxide. Ribbed pipe condenser for air cooling is situated on the back side of the box. The cylindrical refrigerating chamber door is formed as a brine evaporator. Refrigerant regulation by a capillary pipe.

The entire machinery is stored in the upper section and may be readily mounted or demounted. This construction makes it possible to exchange the motor at very low cost should the need arise.

The automatic temperature control is equipped with a defroster which may be conveniently turned on for this purpose. The relative quiet of the Bosch machines must be mentioned. The vibrations are retarded through a complete mounting on rubber. The cabinet top is covered with linoleum and may be used as a table top. The outside is lacquered in colors, the inside white enamel, and the shelves are of bakelite to withstand corrosion. The cabinets may be had with locks.

8. German Refrigerating and Power Machine, Limited Liability Co.

German Refrigerating & Power Machine (DKW)

Scharfenstein, Zschopautal. Trademark: DKW.

Rotary piston compressor, direct or wedge belt drive, sliding-ring piston rod; one or two compressors with condenser, motor, and sliding shutter on one frame.

Water and air-cooled condenser, damper with floating regulator and damper with pressurestatic or thermo- and pressure-statically regulated expansion valve, temperature regulation by pressurestat or thermostat, direct evaporation and brine cooling.

Refrigerant: sulphur dioxide; household and business refrigerators of 0.12—4.0-cu. meters, milk cooler from 100—200 liter an hour.

D.K.W.-Sharfenstein has brought out two new household boxes of 90 and 120 content. They differ from those built until now, because they are of all-metal construction. The lining is seamless steel, with rounded corners. The shelves rest on indentations in the lining. Ice cube compartments may also be used for making frozen desserts, etc. The 120 L size is equipped with foot-lock so that both hands may be used for carrying. The 180 and 360 L sizes have odor-proof walls so that various foods are not contaminated and may be stored separately. Worthy of mention is the special model which includes a small special ice cream maker of ½ pint capacity in addition to ice cube compartments.

* * *

Electrolux

9. Electrolux, Joint Stock Co., Berlin-Tempelhof. Trademark: Electrolux.

Continuously working, hermetically sealed absorption refrigerator, without pump and regulating valve. Refrigerant: ammonia; absorbent: water. Auxiliary gas: hydrogen. Cold production: 21 kilogram calories an hour; sphere of effect up to +35° C. external temperature. Air-cooled condenser.

Temperature regulation by continual heating with electric current, gas, or petroleum, heating intensity capable of regulation in dependence upon external temperature. Daily fuel expenditure at +20/+25° C. external temperature: 2.3 kwh. current; 0.8-cu. meters of gas; 0.5 liters of petroleum.

With gas heating the refrigerator is equipped with safety device against gas deficiency and an instantaneous pilot light with pressure button.

From the spring of 1936: new type of cabinet for household, sheet steel, outside Durolacquer, within, porcelain enamel; 43.5 liters capacity; ice production 0.35 kilograms per day.

* * *

Eisfink

10. The First Asperg Ice Factory. Trademark: "Eisfink."

Stationary, simple-working piston compressor, one and two cylinder, sliding piston ring rod, wedge belt drive, water-cooled cylinder head in water-cooled machines, air and water-cooled condenser.

Direct evaporation with automatic or thermostatic expansion valve, inundated damper with floating regulator. Refrigerant: methyl-chloride. Refrigerators and commercial cooling systems.

Eisenfink refrigerators are slow runners. All pipes and refrigerating parts are made of copper. The household models run from 90 to 400 L content, above these any desired sizes and styles are built for commercial purposes.

Case and lining are made of Armco steel. The outside is lacquered with nitro-white enamel and the seamless lining is porcelain lined. The insulation is composed of impregnated and expanded cork plates. The fittings are chrome plated.

The 265 and 415 L cabinets may be equipped with special inner lining upon an additional payment of 20 marks.

* * *

Autofrost

11. A. Freundlich, Machine Factory, Dusseldorf. Trademark: Autofrost.

Stationary, simple working compressor, one and two cylinder, oscillating pistons with short-circuit motor on the cylinder; the motor driven by transformer with low tension.

Gas density covering of compressor and impulse motor. Compressor with motor, water-cooled condenser, collector of humidity and throttle are mounted on one ground plate. Evaporator for direct air or for brine cooling. Refrigerant: ammonia.

* * *

Fehrenbach

12. Fehrenbach Machine Factory, Limited Liability Co., Vilsburg bei Landshut, Bayern. Trademark: Fehrenbach.

Stationary, simple working compressor, oscillating pistons, one cylinder, only one type with 1000 kilogram calories an hour to=-10° C.; wedge belt impulse, refrigerant: sulphur dioxide.

Air and water-cooled condensers, dry evaporator with expansion valve, temperature regulation by thermostat. By limitation of the product to a machine of one size the lowest cost of production is possible in the production of the series.

Trademark: "R"

Stationary, simple working compressor, one and two cylinder, oscillating pistons, belt impulse, direct or driving coupling, sliding piston ring rod, roller bearing, bundle pipe condenser.

Dry or inundated damper with floating regulation or expansion valve, direct evaporation or brine cooling; refrigerant: ammonia. Ice boxes for industry or commercial purposes.

* * *

Frigidaire

13. Frigidaire, Limited Liability, Berlin, NW 87. Trademark: Frigidaire.

Block arrangement, stationary, simple working compressors, two and four cylinder, oscillating pistons, roller bearing, wedge belt impulse, sliding piston ring rod.

Air and water-cooled condensers, damper inundated and dry with expansion valve, automatically or thermostatically regulated, direct evaporation and brine cooling. Refrigerant: sulphur dioxide and dichlorodifluoromethane (Freon-12).

Commercial refrigerators of 0.78—2.70-cu. meters capacity, household refrigerators of 0.122—0.455-cu. meters capacity. Refrigeration for all business; milk cooling systems of 100—1,000 liter an hour with direct evaporation and brine cooling. Air-conditioning systems, transport cooling systems for train and truck.

* * *

Amberger Kuhlanlage

14. Gerhardt and Schubert, Machine Factory, Amberg (Oberpfalz).

Trademark: Amberger Kuhlanlage (Amberg Cooling System).

Stationary, simple working capsule compressor, oscillating pistons, belt drive, sliding piston ring rod.

Condenser air and water-cooled; dry evaporation with expansion valve, direct evaporation or brine cooling; refrigerant: methyl chloride. Refrigerators for the household from 0.14-cu. meters—0.31-cu. meters; for business 1.5; 2.5 and 3.25-cu. meters; milk cooling systems 50—300 liter an hour; beer cooling.

* * *

Gerlach

15. Eisenwerk Gerlach, Limited Liability Co., Nordhause a. Harz.

Trademark: Gerlach.

Stationary one to four-cylinder compressor, capsuled, simple working, with oscillating pistons, wedge belt drive with belt span mechanism, sliding piston ring rod.

Water and air-cooled condenser, damper with expansion valve, direct evaporation or brine cooling; refrigerant: sulphur dioxide. Refrigerators from 0.30—3.0-cu. meters, beer bars, and display cases.

* * *

Germania

16. Germania Machine Factory; formerly J. S. Schwalbe and Son, Chemnitz.

Trademark: Germania.

Stationary, simple working compressor, oscillating pistons, one to three cylinder, wedge belt drive, sliding piston ring rod, sulphuric acid cooling automaton with water and air cooling.

Ammonia-cooling automatic machine with bundle pipe condensers, overflow damper with float, dry damper with expansion valve, direct evaporation or brine cooling; milk-cooling aggregate.

* * *

Eiskuli and Stolzenberg

17. Getriebebau, Limited Liability Co., Berlin-Reinickendorf-Westphalen.

1. Trademark: Eiskuli.

Stationary, simple working compressor, one to three cylinder, oscillating pistons, motor gas-tight sealed or capsuled and directly joined; crank case and motor case separated. Aggregate gas-tight against atmosphere. Refrigerant: sulphur dioxide.

Condenser with water cooling and air cooling. Automatic oiling. Regulation of temperature by thermostat. Aggregate E 600 with water cooling for direct room cooling. All other aggregates for brine cooling improved.

(Concluded on Page 10, Column 1)

What's This? Conspirators Hatching a Plot?

(1 and 2) Deep dark secrets are being exchanged behind this open window, it would appear. (3) Homeward-plodding laborer reads his censored evening news.

Book Vender

Vending machines are much more advanced, and widely used, in Germany than elsewhere in the world. Inasmuch as most stores are closed at night, retailing of all sorts of small articles—from cigars and toilet articles to beverages and groceries—is conducted through vending machines. Above is a coin-operated book vender.

Flowers Are a Passion with the Germans

Few nations are so fond of flowers as Germany. The sidewalk stands do a rushing business. Note shaved head and winged collar—standard dress—of the business man at the far right.

Hartford Dealers Hold Individual Displays In Place of Show

HARTFORD, Conn.—Individual displays in the showrooms of the 41 participating dealers marked the 10-day city-wide showing of 1937 refrigerator models which opened here April 1.

Announcement of the show's beginning was made in a 14-page special section in local newspapers. The individual displays this year supplanted the combined showing formerly held.

Participating dealers included:

Albert Radio & Electric Corp. (Hotpoint); Arcand Electric Co. (Kelvinator, Norge, Crosley); Bauer & Co. (Frigidaire); Beach Sales Co. (Frigidaire); Brown-Thomson & Co. (General Electric); Capitol Radio Service (Hotpoint); Collins Oil & Heating Co., Inc. (Kelvinator); Dempsey's Radio Store (Hotpoint); East Hartford Radio Co. (Grunow, Stewart-Warner); Flint-Bruce Co. (Electrolux, Kelvinator, Frigidaire).

G. Fox & Co. (General Electric, Frigidaire); Garber Brothers, Inc. (Universal); General Heating Co. (Stewart-Warner); Hartford Gas Co. (Electrolux); Hatry & Young (Hotpoint); Hub Radio Store (Apex, Copeland, Crosley, Hotpoint, Grunow, Norge, Leonard, Sparton, Stewart-Warner, Universal); Hurwit Furniture Co. (General Electric); Samuel K. Lavery (Westinghouse, Hotpoint); Mayflower Sales Co. (Universal, Hotpoint, Crosley); McCoy's, Inc. (Westinghouse, Hotpoint); Metzger's (Hotpoint, Leonard).

Orkil Electric Co., Inc. (General Electric); Park Street Furniture Co. (Universal); Pequot Electric Co. (Hotpoint); Perry Electric Co. (Frigidaire); Christian Petersen & Son (Kelvinator); Ritardi Appliance Co. (Stewart-Warner, Grunow, Hotpoint); J. L. Roche Appliance Co. (Westinghouse, Universal); J. Rosenblatt & Co. (Stewart-Warner, Crosley); Sage Allen & Co. (Norge, Stewart-Warner, Universal, Grunow, Electrolux).

Sears, Roebuck & Co. (Coldspot); Shoor Brothers (Norge, Crosley, Universal, Grunow); South Green Furniture Co. (Crosley, Grunow); Standard Radio & Electric Appliance Co. (Hotpoint, Crosley); William Toubman & Sons, Inc. (Norge, Universal); Tuckel Radio & Electric Co. (Hotpoint, Stewart-Warner, Grunow); Tyler Sales Co. (Hotpoint); Victory Radio Salon (Stewart-Warner); Arno M. Weber (Stewart-Warner, Crosley); Wynn's Electrical Sales & Service (Hotpoint); Wise, Smith & Co., Inc. (Westinghouse).

Ballard to Distribute Leonard at Salt Lake

SALT LAKE CITY—Ballard Distributing Co., affiliated with Ballard-Nash, automobile distributor, has opened as Leonard refrigerator distributor in Salt Lake City and the intermountain area.

Ralph H. Larson, formerly manager of Boyles Furniture Co.'s Salt Lake City Store, is salesmanager of the new organization. He was succeeded at Boyles by John Seaman.

Park Replaces Watkins as Norge Secretary-Treasurer

DETROIT—John Park has been appointed secretary-treasurer of Norge Division, Borg-Warner Corp., to replace C. W. Watkins, who has been granted a leave of absence because of ill health.

Post & Lester to Handle Copeland in Connecticut

HARTFORD, Conn.—Post & Lester Co. has been appointed Connecticut distributor for Copeland refrigerators.

Sales Manager or Distributor for Washington, D. C.

Due to absorption of Washington's oldest, largest electrical house by national manufacturer and discontinuance direct sales activities, manager seeks new connection for Washington sales. His special qualification is ability to organize specialty sales on profitable basis and to secure large volume business. In 14 years as manager has made profit each year; total sales about $11,500,000; sales past two years over a million each year on varied line including electric refrigeration both domestic and commercial, ranges, air conditioning and oil heating. Commission or equivalent basis preferred. Will consider good distributorship. Age 39. Graduate engineer. Address C. L. McCrea, 3300 Cathedral Ave., Washington, D. C.

Progressive Jobbers Everywhere Stock A-P Controls.
AUTOMATIC PRODUCTS COMPANY
MILWAUKEE WISCONSIN

Ingenious McGee Devises Protection System for Mrs. Dyer's Snacks

CORSICANA, Tex.—If it had been only her husband who was responsible for the regular nightly disappearance, Mrs. J. M. Dyer probably wouldn't have minded so much. She had no objection to his enjoyment of midnight snacks.

But when strangers crept up onto the back porch of her house in the dead of night, collected various victuals from the box, and silently sneaked away to gorge themselves on the pilfered provisions, Mrs. Dyer went into action.

It's the custom down here for refrigerators to be installed on back porches because cool night air helps to keep down the running expenses, and Mrs. Dyer had no intention of moving her machine into the house.

She appealed to J. M. McGee, Corsicana's Norge dealer, to do something to put an end to the nocturnal visits of the free-lunch fiends. McGee's inventive mind went into operation and succeeded in producing an effective antidote.

Using a door bell, a transformer, several feet of wire, and an automatic switch on the refrigerator door, McGee rigged up an ingenious burglar alarm. Whenever the door is opened while the alarm is connected, the bell rings, frightening away the interloper with its shrill tone.

Now Mrs. Dyer can rest peacefully at night, for all she has to do to set her mind at ease is turn on the switch to the alarm before going to bed. In the daytime, she can cut off the connection.

Nash-Kelvinator Directors Vote 25-Cent Dividend

DETROIT—A dividend of 25 cents per share, payable May 20, was voted to all stockholders of record at close of business on April 26, 1937, at an April 12 directors' meeting of Nash-Kelvinator Corp. This is the first dividend voted since election of the new board on March 4.

A previous 25 cents dividend was voted on Feb. 20 following the merger of Nash Motors Co. with Kelvinator Corp.

Two Kelvinator Dealers Appointed in Dayton

DAYTON—Elder & Johnson Co., department store, and Dayton Maytag Co., appliance outlet, have been appointed Kelvinator dealers here.

Main Auto Supply Co., Xenia, Ohio, also has been named a Kelvinator dealer.

General Appliances to Retail G-E in Jackson, Miss.

JACKSON, Miss.—General Appliances, Inc. here has been appointed dealer for the General Electric line of household and commercial refrigerators.

CONDENSERS
COMMERCIAL EVAPORATORS
DOMESTIC EVAPORATORS
COMFORT COOLERS
MARKET COOLERS
AIR CONDITIONING SURFACE
UNIT HEATERS
BLAST HEATING SURFACE
McCORD
REFRIGERATION AND AIR CONDITIONING PRODUCTS
CATALOGUES ON REQUEST
McCORD RADIATOR & MFG. CO.
DETROIT, MICHIGAN

8 Dealers Share in Cheyenne Refrigeration Show

CHEYENNE, Wyo.—Eight electric refrigeration dealers shared in the city-wide 1937 refrigeration show which closed April 3. Participating dealers were:

Harris Furniture Co. (Norge); Maytag Store (Crosley); C. H. Simpson (Frigidaire); Percy Smith Mercantile Co. (Fairbanks-Morse, General Electric, and Stewart-Warner); Woodley-Hanes, Inc. (Westinghouse); Cheyenne Light, Fuel & Power Co. (G-E); Forbes Music Co. (Leonard and Electrolux); Frontier Music Co. (Sparton).

50 Norge Space Heaters Sold for Omaha Area Tourist Cabins

OMAHA—Fifty Norge space heaters were sold in three days by an enterprising Norge retail salesman who contacted owners of tourist cabins in this vicinity, according to A. Y. McDonald Co., Norge distributor.

The cabins, previously untenantable except during summer months due to the absence of heating facilities, have done a thriving late-winter and early-spring business since the Norge units were installed, Mr. McDonald states.

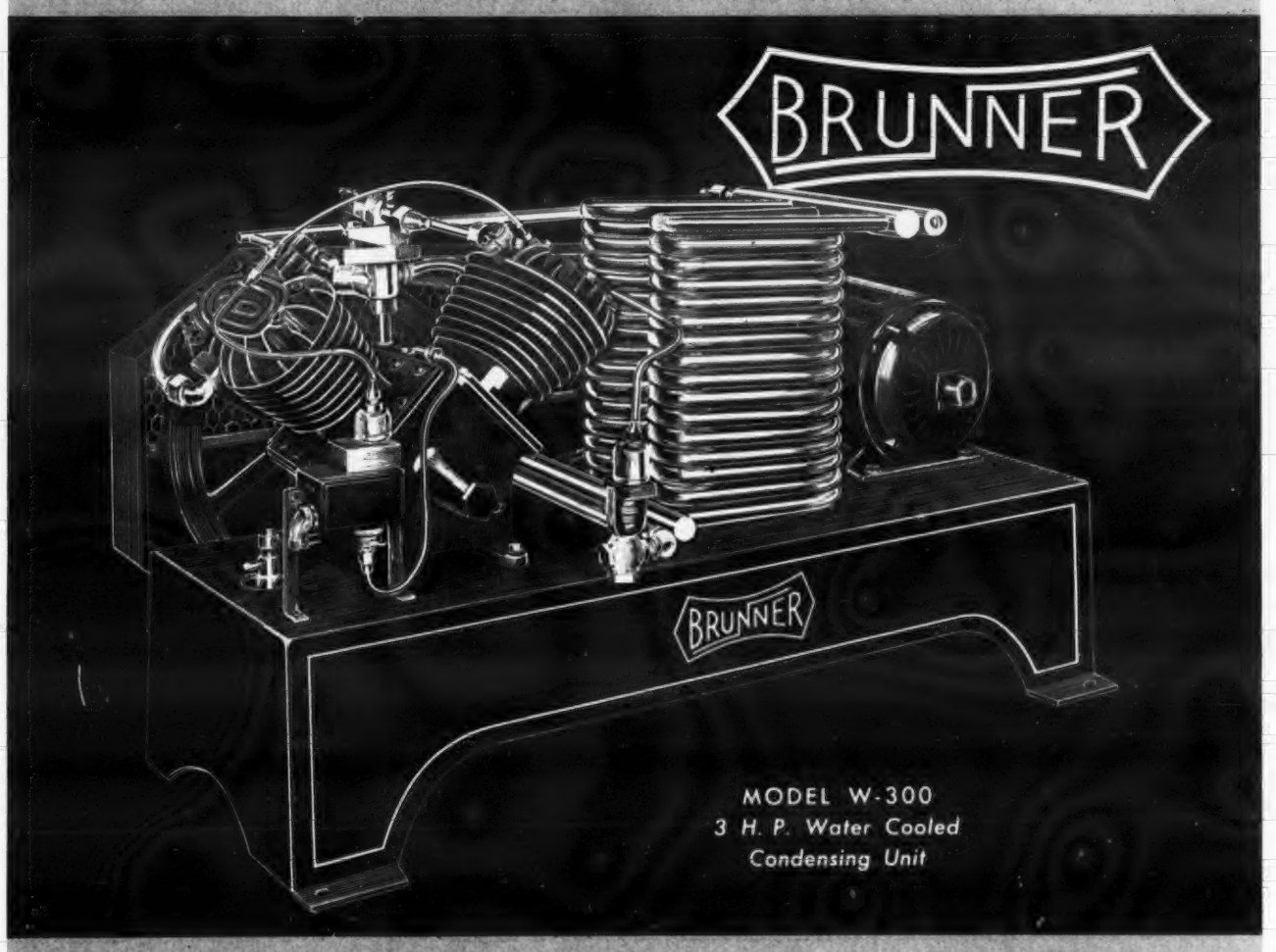
9 Wisconsin Rapids Dealers Exhibit at Home Show

WISCONSIN RAPIDS, Wis.—Nine refrigeration dealers were among the firms exhibiting at this city's annual Home and Food Show April 2 to 4.

Refrigeration dealers were:

Hirth Hardware, (General Electric); Mack's Home Appliance Store, (Coldspot); Carey Electric Co., (Gibson); Real Radio & Electric Service, (Crosley); Staub's Electric Shop, (Norge); Wisconsin Rapids Gas Co., (Electrolux); Guarantee Hardware Co., (Frigidaire); Johnson Hills, (Westinghouse), and Montgomery-Ward.

THE DYNAMIC BALANCE OF RECIPROCATING PARTS INSURES SMOOTH, VIBRATIONLESS OPERATION



MODEL W-300
3 H. P. Water Cooled
Condensing Unit

Balancing the opposing masses of fast-moving metal in a complicated mechanism like the modern refrigeration unit is not the product of slide-rule computation . . . not a run-of-the-draftingroom problem. *Dynamic balance*—bringing each and every moving part into "mechanical accord" with every other part—this is the outcome of tireless research, intimate knowledge of refrigeration conditions, plus years of manufacturing experience. It is embodied in today's smooth-running Brunner units . . . Look into this Brunner feature before you make any decision on the best equipment to install! Watch a Brunner in action. Put your hand on the sturdy base. Feel the low minimum of vibration dynamic balance achieves. Then: consider the extra years of service it is bound to deliver. You'll find full details in the new Brunner Refrigeration Catalog, listing 47 condensing units, air and water cooled, for nearly all refrigerating and air conditioning installations. Write: Brunner Manufacturing Co., Utica, N.Y., U. S. A.

BRUNNER
BUILDS FOR *Greater* DEPENDABILITY

(*Concluded from Page 8, Column 5*)

Milk cooling aggregate for 100—600 liters an hour.

2. Trademark: Stolzenberg

Stationary, simple working capsule compressor, oscillating pistons, wedge belt drive, sliding piston ring rod. Water-cooled condenser; direct evaporation and brine cooling. Refrigerant: ammonia.

* * *

Gutmann

18. Alfred Gutmann, Joint Stock Co., Altona-Hamburg.

Stationary, simple working capsule compressor, oscillating pistons, sliding piston ring rod, wedge drive. Refrigerant: methyl-chloride. Water and air-cooled condenser, dry damper with expansion valve, overflow damper with float regulation.

* * *

Karl Hagen

19. Karl Hagen, Kuhlautomaten-fabrik, Berlin.

One to four-cylinder compressors, stationary simple working, capsuled, oscillating pistons, wedge belt drive, sliding piston ring rod, water and air-cooled condenser.

Inundated or dry damper with float regulator or expansion valve, direct evaporation or brine cooling; refrigerant: methyl-chloride. Room, cabinet, and milk cooling.

* * *

Haubold

20. C. G. Haubold, Joint Stock Co., Chemnitz. Trademark: Haubold.

Construction hermetically sealed, without piston rod, high and low pressure sides are provided for in one globe; compressor with V-shaped arranged cylinders placed in the condenser globe; oscillating pistons.

Impulse from wedge or flat belts. Water or air-cooled condensers. Inundated evaporator with float regulator for direct evaporation or brine-cooling. constructions for milk-cooling.

Refrigerant: Sulphur dioxide. Special and deep-freezing systems.

Stationary, simple working one and more cylinder capsule compressors, oscillating pistons, wedge belt drive, sliding piston ring rod. Water or air-cooled condenser. Lamina evaporator for room cooling. Pipe evaporator for brine cooling.

Dry evaporator with thermostatic expansion valve, overflow evaporator with floating valve, direct evaporation or brine cooling. Refrigerant: sulphur dioxide. Refrigerators from 110—230 liters capacity, commercial refrigerators, and milk spray coolers.

Ammonia compressors:

Stationary, simple working one-cylinder compressors, oscillating pistons, impulse with wedge, or flat belt or coupling; sliding piston ring rod or graphite packing. Water or air-cooled condenser. Dry and inundated evaporator, regulation in dependence upon condenser and evaporator pressure. Direct evaporation or brine cooling. Common bed plate for compressor, motor, and condenser up to horse powers of 6000 kilogram calories an hour.

Alfred Teves

Established in 1906, the Alfred Teves Maschinen-und-Armaturenfabrik G.m.b.H. manufacturing firm began its career with the production of fittings for various industrial purposes.

Automobile parts were next manufactured by this firm. In a few years it became one of the leading piston ring factories in Europe.

Broadening its industrial scope, the company started to manufacture electric refrigeration units for domestic, commercial, and industrial use in 1927, and introduced the "ATE" units.

Air-conditioning equipment, later added to the company's line, found a good market—especially in the chemical industry, according to Dr. Alfred Teves, owner of the firm.

Dr. Teves, who heads and directs the firm, has assisting him his son Heinz Teves, manager of the Berlin plant, which was established in 1935. Another son, Ernest Teves, a recent graduate of Harvard College, is now affiliated with the company.

Personnel of the Frankfort and Berlin Teves plants, comprising workmen, technical, and commercial engineers, numbers approximately 2,000. Specialized engineers work under the management of a technical director. The plants are said to be among the most modern and best equipped in Germany.

Dr. Teves comes to America each year to view new developments in the refrigeration manufacturing field, and to confer with business associates in the industry.

In addition to manufacturing all types of refrigeration equipment, the Teves concern is licensor of Lockheed hydraulic brakes in Germany.

In addition to its five models of 100 to 550 L refrigerators, the Alfred Teves Co., Frankfort, has recently added a new cabinet of 140 L capacity. The machinery built in the bottom of the cabinet is suspended by springs, so that is driven without vibration and is practically noiseless.

Even in extreme temperatures the cold control insures complete refrigeration of all foods contained. The ATE units are built so that the machinery as well as the cooling system will give complete satisfaction even in sub-tropical temperatures.

In addition, special tropic cabinets have been developed that will remain at 6° C. inside, even at an outside temperature of 35° C. Great weight is also laid on the ice cube production of the refrigerators. With properly regulated cabinet temperatures their speedy formation will not be difficult.

* * *

Brown Boveri

Brown Boveri and Co. builds cabinets in nine sizes from 90 to 560 L storage content and equipped with gas-tight inclosed BBC automatic coolers. For the year 1936 three new models in the 90-120-150 sizes were developed in which the automatic coolers were completely inclosed in the top and therby could be used as "built-in" units for kitchens. They are interchangeable for A.C. or D.C. use.

Siemens-Schuckert

The cabinets of the Siemens-Schuckert Co. have been lowered at the top this year to hold the compressor. The color, to correspond with present demands for kitchen furniture, is cream enamel. The inner shelves are in contrast black enamel.

In the smaller models the evaporator is rounded off and inclosed with enameled steel, thereby giving storage space for bottles next to it. A novelty is the offering of a built-in meter if wanted. There has also been an improvement in the temperature regulation for extremely hot days.

The number of models has also been increased by a double-door 300 L content cabinet for country use. Now models of 60, 80, 120 and 300 L content are available.

* * *

Germany, the Country

Germany, with an area of 181,723 sq. miles and a population of around 65,000,000, has as her principal towns: Berlin, Hamburg, and Bremen. Cologne is a great tourist puller; Munich, the chief art center; Leipzig, noted for its trade fairs; Essen, Dresden, Breslau, Frankfort-on-Main, Dortmund, Dusseldorf, Hanover, Duisburg Hamborn, and Suppertal are the remaining cities of note.

Arable land (not including the Saar Basin)—vineyards, orchards, market gardens—amounts to 46% of the total area of the Republic.

Principal crops are wheat, rye, barley, oats, potatoes, sugar beets, leaf tobacco, and hops.

Conducted under the care of the State, forestry has become a great industry in Germany. Forest area is estimated at around 32,000,000 acres—about 28% of the total area of the country. This area consists of State and partly State forests, commercial and private forests, and forests belonging to various associations and foundations. Deciduous trees, oak, birch, ash, beech, pine, larch, and red and white fir are most common.

Most of Germany's minerals are mined in Prussia. Chief mining districts are Westphalia, Rhenish Prussia, and Silesia, for coal, iron and metal-smelting works; Central Germany for brown coal; the Harz for iron and copper ore; and the Westerwald for iron ore. Saxony also has coal mines.

In production, lignite leads the field, with coal a good second. Potash comes third, with iron ore, rock salt, copper ore, brine salt, petroleum, zinc ore, and lead ore following in order.

Preceded only by France and the United States, Germany ranks third among the world's iron producers. The manufacture of both iron and steel is carried on in the vicinity of the coal mines in the Lower Rhine district in Westphalia.

Iron and steel in many varieties—pig iron and the non-malleable ferro-alloys, puddled bars, ingots, malleable iron in bars, girders, plates and sheets, wire, pipes and tubes, rails, sleepers, wheels and axles for railway use, structural malleable iron, domestic utensils—lead the list of Germany's exports.

Second item on the export list is machinery, production of which is one of the most important pursuits in Germany. For many decades the Germans have paced the world in technological advancement.

* * *

Storybook Land

Germany—the heart of the Old World—is characterized by the kind of idyllic romanticism you have pictured from reading historical novels. The broad meadows, sloping hills, splendid forests, rivers and ancient castles lend an air of medieval peace to this section of the world which is unsurpassed anywhere else in Europe.

Up northward the Baltic and North Seas wash innumerable small islands—Heligoland, Sylt, Norderney, and Hallig in the North Sea, and in the Baltic the Rugen, with its famous hundred-meter-high chalk cliffs. Here are found bathing resorts and old Hanseatic cities.

The Harz, Thuringia, the Silesian mountains, the Bavarian forest, the Swabian Alb and the Black Forest are visited by Germans for "healthful air," by tourists for glimpses of the quiet life.

Swimming baths, sun and air baths, athletic fields, tennis courts, golf courses and race courses are plentiful in these districts.

Portions of the Alps, and the peaks of the Upper Bavaria, are located in Germany. Snuggled in the valleys are little peasant villages, with houses arranged Swiss style. Here you can see young people dance the lovely "Schuhplattler" to the plaintive picking of zither and guitar.

Germany derives more "Old World" atmosphere from her 2,000-year-old cities—Trier Worms, Ausburg, Regensburg, Mainz, Koblenz, and Aachen—which have buildings and monuments dating from the days of the ancient Romans; and from her Gothic cities of the Middle Ages—Nuremburg, Rothenburg, Dinkelsbuhl, Nordingen, Freiburg in Baden, Ulm, Hildesheim, and Brunswick. Baroque and Rococo styles are found in Dresden, Potsdam, Bayreuth, Wurzburg, and Bamberg.

Many tourists, though, never do discover that Germany has its "old world"; the modern age finds such vigorous expression in industrial Germany in her new architecture. Stuttgart, Frankfort-on-Main, Cologne, Dusseldorf, Essen, Hanover, and above all, Berlin—with their tall buildings, modern settlements, magnificent industrial plants, and streaming traffic, demand top ranking among the ultra-modern metropoli of the world today.

The Kardstadt Warenhaus in the east end district of Neukolln, Berlin, (one of the greatest department stores in the world) and the Chilehaus, a business building in Hamburg, are two of the most outstanding modern stuctures in the world.

* * *

Berlin

Strikingly twentieth century, despite its Old World heritage of more than seven centuries, the capital of the Third Reich of Adolph Hitler, and hub of its political and economic life, spreadeagles the sandy plain on both sides of the river Spree.

Berlin today has a population of almost four and one-half millions, and is fourth largest city in the world, being exceeded only by New York, Tokyo, and London.

Youthful and dynamic, Berlin is architecturally new; 75% of its buildings are of modern construction, many of them "modernistic." Old quarters can be found, but they are off the beaten track, and largely have been rebuilt.

Originally a medieval town on an island embraced by two arms of the Spree, Berlin dates from the early days of the 13th century, when Slavs and Teutons battled for its possession. Not until after it lost its freedom as an independent town in the 15th century, and became one of the capitals of the Hohenzollerns, did it begin to assume significance as a city.

Today the oldest quarters of the city have become its commercial districts. Alt-Berlin, Alt-Kollen, Freidrichs-Werder, and Neu-Kollen are intersected with street after street of imposing business buildings and warehouses. Here and there can be seen older structures, but the mass effect is predominantly new.

Around these sections rises an inner zone of 17th and 18th century structures, bordered by suburbs which were taken into the city limits during the past hundred years.

How much of this modernizing of old Berlin has been due to the enterprise of the Reichsfuehrer and the new Nazi order, and how much to the native industry and progressive spirit of its residents, is conjectural. But approaches to the old quarters have been cleared of obstructions, dark lanes and alleyways have been broadened, and Berlin presents a clean, attractive face to the world.

Nearly all the homes one sees have second-story balconies on which flower boxes bloom during the summer months, lending a gay note to the severest Berlin "haus."

* * *

Leading Streets

Unter den Linden (sometimes called simply the Linden) is Berlin's Broadway. Extending from the Brandenburger Tor gate to the former Schloss, it is flanked by palatial buildings, the city's best hotels, restaurants, and stores. Although much shorter than major thoroughfares in most large cities, Unter den Linden crowds into its comparatively insignificant span most of Berlin's *haut monde*.

Longest street in the inner town is the Friedrich Strasse, a boulevard about two miles long, joining the former Brandenburg Gate with the Halle Gate. Potsdamer Platz and Koeneggraetzar Strasse correspond roughly to Times Square at their intersection, where traffic is heavy.

Leipziger Strasse, the city's chief traffic artery, parallels the Linden for about a mile, and is lined with Renaisance buildings interspersed with some of Berlin's best examples of modernistic building. Down this street passes many a Mercedes-Benz. (In case you don't know, a supercharged Mercedes-Benz will come close to doing 200 miles an hour on the highway).

The northern half of the Wilhelm Strasse borders the most aristocratic part of Berlin. This runs south of Unter den Linden for about a mile and a half.

* * *

Berlin's Westchester

Berlin's "West End," like that of London and Paris, is the center of upper-class life. Here, on the edge of the Tiergarten, with its fine homes situated in what were small parks just a few decades ago, is a miniature Westchester.

Factories and small workshops occupy the east end of the city, center of the commercial district. Buildings housing the "skilled" industries, such as cabinet-makers' shops and the metal foundries, are located in the southeast quarter; textile mills are found further to the northeast.

The seat of machine works and foundries, established in the north quarter between 1860 and 1880, has been moved out to the northwest as far as Tagel and Reinickendorf, and the old royal iron foundry now houses physical science schools.

There are 150 stations and 39 stops for passenger traffic within the city limits, together with 46 stations belonging to the electrified Metropolitan Railway system (Stadtbahn).

A subway connecting the Anhalter, Friedrichstrasse, and Stettiner stations is under construction. Principal long-distance train stations are Charlottenburg, Zoologischer Garten, Friedrichstrasse, Alexanderplatz, and Schlesischer Bahnhof.

Bus fares to all parts of the city's 334-square-mile area are reasonable. There are 53 miles of subways with 94 stops, and 404 miles of surface car tracks with 70 lines reaching out to the suburban districts.

Glorious Soprano

Photographed by the editor in a large Berlin music hall, this fine German soprano has captured her audience. Sopranos are to Germany as home-run hitters are to the United States.

Cabbies Flourish in Berlin

With his varnished top hat and his grim expression, this representative of the hansom cab fraternity awaits your business.

— HOW SUCCESSFUL DEALERS OPERATE —

Westchester Dealers Note Upswing in Sales of Larger Models as Money Flows More Freely than for 7 Years

By W. H. Long

WESTCHESTER COUNTY, N. Y. —Wealthiest suburban county in the United States, a good field for merchandising operations, unusually friendly and cooperative dealer relations, the best spring business in recent years, and an intelligently managed dealer association aiding its 78 members—this, briefly, is the electric refrigeration picture in Westchester County, home of half of New York's country gentry commuters and one of the finest community centers in the East.

Outsiders, impressed by the magnificence of the county's home developments, sometimes get the impression that Westchester is a real-life version of a dealer's dream. Its veteran retailers will tell you that refrigeration merchandising here has just as many headaches as in Crossroads, Iowa.

The buying public here is sophisticated, and most of it is only 45 minutes from Broadway. It has heard about every sales story the fertile minds of refrigeration salesmen can invent or absorb.

Westchester housewives know what they want. And despite an atmosphere of station wagons and wealth, there are thousands of small homes and even-as-you-and-I people to sell. Hence—some smart sales ideas and alert-minded dealers.

Two things stand out on Westchester's Refrigeration Row this spring—a surprising, but natural, upswing toward purchases of larger refrigerators, and the determination of most dealers to lick their quotas with more ready money in the county than at any time in the past six or seven years.

PROUD OF SALESMEN

In New Rochelle, proud of its reputation as a "society town," holds forth Ed Lowe, with an exclusive General Electric franchise in his home town, in Pelham, and in Larchmont. Mr. Lowe, whose store is in the heart of New Rochelle's Main St. shopping district, is second vice president of the Westchester Gas & Electrical Appliance Dealers Association.

He is proud of his five salesmen and their part in building his business from a $6,000 net in 1932 to one of $24,000 last year.

"I do everything but sleep with them," he declared. "They all started with me, and every one of them has a key to the store and access to the cash register at any time, day or night.

"Most outside salesmen I know are treated like scum; I like mine, and they like me. Every sale is a salesman's sale. I don't interfere with them. And that's the reason we do a good business and get along."

Mr. Lowe's views on refrigeration merchandising are as succinct as they are forceful.

"What we dealers want to do," he says, "is to get this out of the 'bastard' business class. I am absolutely against sales tricks, whooping up gadgets, and offering premiums. I'm a firm believer in list prices, and those controlled by the manufacturer—nobody else. Any manufacturer who stabilizes his prices and keeps them that way need never worry about volume."

The New Rochelle G-E man says he refuses to accept ice boxes as trade-ins; and encourages his service men to act as "bird dogs" by offering them a 2½% commission on every call which is later turned into a sale, the bonus coming out of his outside salesman's commissions.

Price?

"Price means nothing, in my estimation and experience," says Mr. Lowe. "If Mrs. Jones is sold, she'll buy—and hacking off a dollar here and there won't change her."

To built store traffic for his other lines of household appliances, Mr. Lowe makes all time payment collections in his store. No collections are made by collectors visiting homes. He handles most of his time paper himself, making occasional assignments to local banks.

His latest venture with his salesmen and other employes was to take a party of 24, including wives and sweethearts, into New York for an evening at the Hollywood Restaurant.

PRODUCTIVE USERS

Across the street from Lowe's is the Home Appliance Co., Westinghouse and Stewart-Warner outlet managed by Arthur M. Bender, formerly Westchester manager for the Timken Roller Bearing Co.

"You have to be familiar with your users before you get prospects," said Mr. Bender in speaking of his methods of getting the latter into his store.

To encourage this, he and his salesmen visit each customer's home every 60 to 90 days taking along an impressive-looking thermometer to test temperature conditions in the box Home Appliance Co. has installed in the home.

Later, a second call is made to present the housewife with a recipe book and to ask for neighbors' or friends' names. In this way, Mr. Bender and his salesmen build a prospect list for home calls.

On his show windows, this New Rochelle dealer has placed originals of two cartoons in which refrigerators play a part. One is placed on a window parallel with the street, the other on a window vertical to it and close to the store's door. The object: if a passer-by sees one, he'll want to look at the other, and then directly in front of him is the showroom floor with its line-up of Westinghouse and Stewart-Warner refrigerators.

In a Westinghouse 5-cu. ft model standing on one of the windows, Mr. Bender has installed an assortment of colored electric light bulbs which flood the interior of the box with myriad colors. He says that the display has no particular significance, but several prospects are drawn into the store each day to inquire the reason for putting light bulbs in a refrigerator.

As a monthly "encourager" for his salesmen, Mr. Bender has inaugurated a series of dinners: steak for the man who makes the most night calls on prospects when husband and wife are at home together, pork chops for the salesman who makes the most user calls, and beans for the "rear guard."

And Mr. Bender has found that salesmen will exert themselves for a good meal where other inducements fail.

FURNITURE TIE-IN

James Hoffman, veteran of 11 years selling Frigidaires, at Sterling Furniture Co. further down New Rochelle's Main St., uses tie-ins with sales of suite furniture and the outfitting of complete homes to boost sales.

New Rochelle is a center for young married couples furnishing their first home together, and Mr. Hoffman capitalizes on this feature of the town's life.

Sterling Furniture Co. formerly operated three stores in Westchester, but now has centered merchandising in New Rochelle. Its Frigidaire display is extensive and located in the front of the store, surrounded by attractive arrangements of complete living room suites where customers can sit down and view the refrigeration line-up at their ease.

Mr. Hoffman declares that chiseling is present in Westchester towns, but that it is comparatively mild and confined to a few dealers whose sales volume is small and therefore of not much consequence to county dealers as a group.

KITCHEN DISPLAY

Norge Stevens, Inc., located at 430 North Ave., is going in for promotion of all-electric kitchens in a big way and finds 1937 spring business just about all its sales force can handle, according to F. R. Stevens, owner, and C. L. Salerno, store supervisor.

In the left rear corner of the store, this Norge outlet has installed a remarkably "homey" looking all-electric kitchen, complete with windows and lace curtains, a Norge L-62-6, Norge electric range, and overhanging cabinets and serving tables with inset sink. A blue-and-white color scheme predominates.

The Norge Stevens store is divided in halves, with lines of kitchen cabinets and linoleum on one side of a connecting arch. Most housewives, the management finds, come in to look at a cabinet or new floor covering and without much persuasion walk over to the other side to view the all-electric kitchen and test its features for themselves.

This company uses a canvass of contractors and builders in the Westchester area for most of its leads. Rebuilding and modernization projects, according to Mr. Salerno, are particularly good sources for prospects, and this spring more of this business is being done than ever.

Norge Stevens uses the "endless chain" tie-up system on Norge products in creating customer interest and promoting sales. Mr. Salerno finds that a housewife specifically desiring to purchase a refrigerator often is half sold on a range or a washer, and many times the three can be coupled in one sale.

The arrangement of the showroom is conducive to this sales strategy, with all products grouped near the all-electric kitchen.

(*Editor's Note*: This report on the merchandising methods of Westchester County appliance dealers will be continued next week.)

"Every dollar counts in the restaurant business—and our electric bills have been much smaller since we installed our Copeland unit."

Hotels, restaurants, soda fountains, dairies—thousands of them everywhere testify to the trouble-free economy and efficiency of Copeland commercial refrigeration units.

Write for our Sales Plan

COPELAND

REFRIGERATION CORPORATION . . . DETROIT, MICHIGAN

$ $ $ CASH IN $ $ $

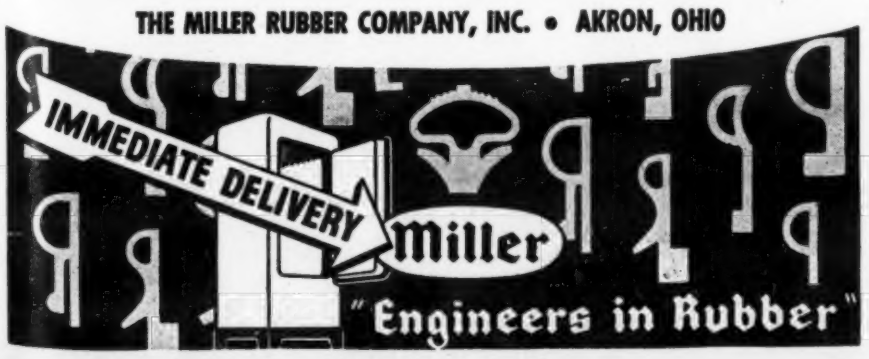
ON THIS NEW REPLACEMENT MARKET

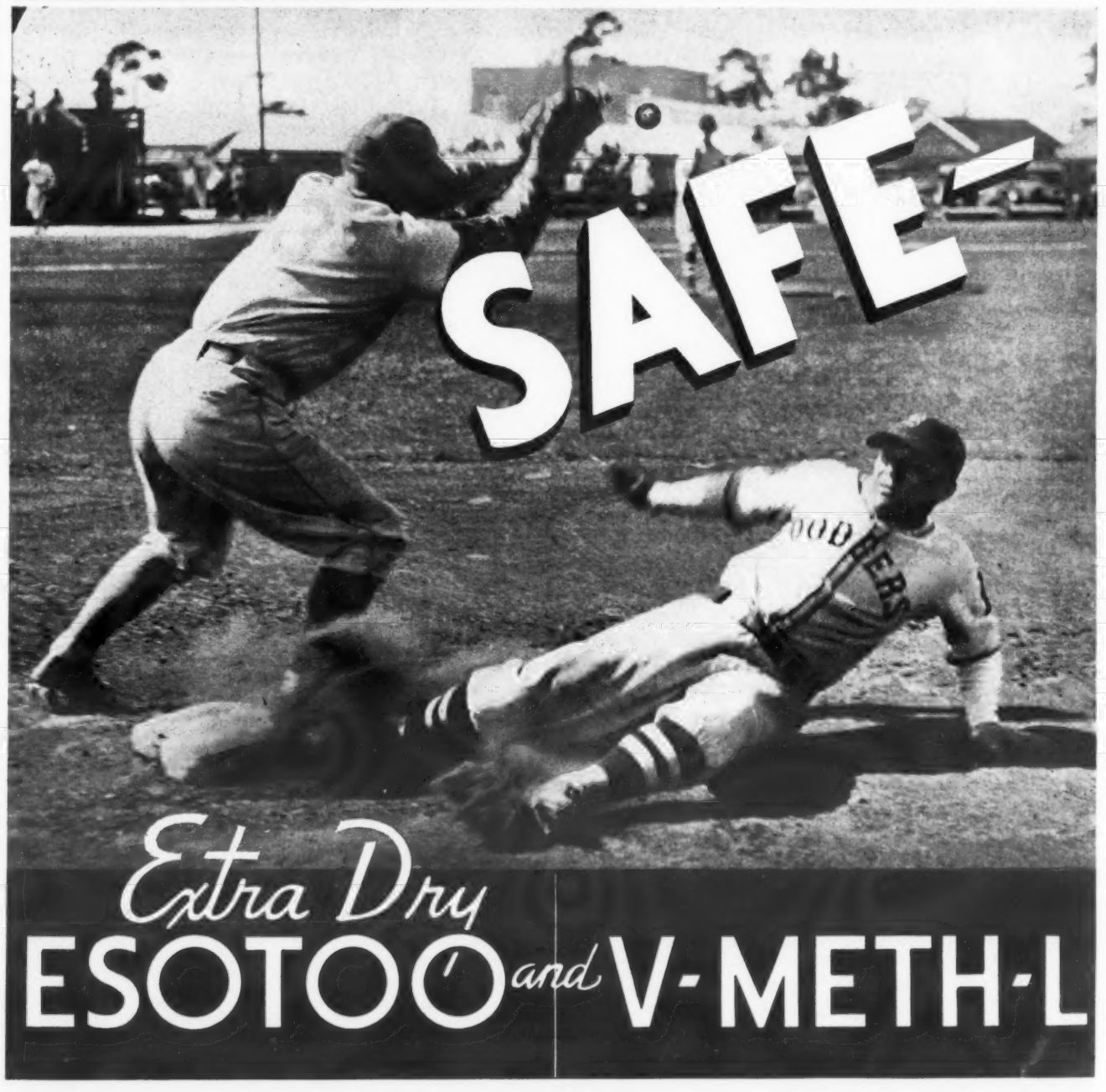
• Door gaskets offer a vast replacement market which is growing every month. Why not cash in on this opportunity by being one of the first to offer this much-needed service?

It's plus business that is easy to get. Easy to handle, too, if you rely on Miller. You can service 80% of all refrigerators made to date from the Miller condensed line of 20 gasket types. Special type gaskets are also available, if needed.

Every owner of a refrigerator 5 years or more old is a prospect for this service. Supply it and add to your profit. Send for illustrated price list. Call your local jobber, or if he cannot supply you, write direct.

THE MILLER RUBBER COMPANY, INC. • AKRON, OHIO





Experienced service men know that when they use Extra Dry ESOTOO and V-METH-L they are

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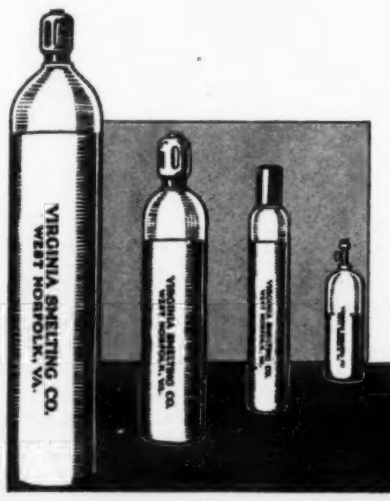
These refrigerants have been tested and re-tested. When you use them, you are assured definite, positive results. Their proven quality guarantees their performance.

You can get these two refrigerants promptly from any one of 72 distributing points throughout the world.

A note will put at your service the knowledge of our large staff of experts.



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WEST NORFOLK, VIRGINIA

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Impartial Tests

PUBLISHED in the letters column on this page are two requests from consumers for the NEWS to help them in selecting a household electric refrigerator. Letters such as these come in not infrequently. And in every case the reply must be the same:

We do not attempt to pass judgment upon the relative merits of the various makes of refrigerators, or to advise prospective purchasers regarding the type of equipment which will be most suitable or satisfactory for their requirements.

When an answer of this sort is made, those who write to us sometimes seem to feel abused. It is their notion that we know, but won't tell.

The News Is Not A Consumer's Paper

It is true that AIR CONDITIONING AND REFRIGERATION NEWS is not a consumer publication, and hence feels no mandate to serve as spiritual or material adviser to the general public.

The NEWS is a business paper. It specializes on collecting and distributing—for a particular audience—a vast variety of information useful to manufacturers, distributors, dealers, salesmen, engineers, service men, investors, and others who have a special interest in air conditioning, refrigeration, and electrical appliances.

Even if the NEWS were interested in serving the consuming public, the fact remains that we have no facilities for making the laboratory tests which would be necessary and proper before we might be able to arrive at any authoritative opinion regarding the relative values of competing products, designs, parts, materials, and types of construction.

It should be noted that we are not annoyed by letters of this sort, even if we are unable to answer them. They demonstrate that the NEWS has built up a high degree of confidence in many quarters as an impartial organ, one which can be trusted to give the facts without bias and prejudice.

Obviously those consumers who write to us for advice must have been given the name and address of the NEWS by dealers who themselves have been impressed —over a period of time—by its fairness and willingness to print the truth, even though it might hurt somebody.

Demand for Unbiased Product Information Arises

A considerable body of opinion has grown up during recent years favoring the development of authoritative sources of information on manufactured products, designed to help consumers in their endeavors to separate the wheat from the chaff in advertising and sales arguments.

Partly due to the demagogues, and partly because of muckraking authors who have been collecting royalties through exploiting half-truths, a considerable portion of the public has become suspicious about the things they buy. In consequence, there has arisen a demand from many sources that reliable information should be available regarding competitive products in order to protect unskilled buyers from being victimized and hoodwinked by unscrupulous merchandisers.

Certain organizations, such as Consumers' Research, have been developed with the avowed purpose of satisfying this demand. They have made quite a business of it; and the rabid loyalty of some of their followers is ample evidence to the need for the service.

It has been our impression, however — an impression based upon their "research" into refrigeration—that such "fountains of wisdom" are often *long* on enthusiasm for the task, but *short* on scientific skill and technical equipment for making the tests.

Should the Federal Government Provide Testing Service?

The trend of the times would seem to indicate that this is a job for the national government to undertake. Despite the warnings of old heads, the country seems definitely headed toward a progressively greater reliance on The Great White Father down at Washington to solve all of its problems. It really is surprising that some sort of Consumers' Testing Agency has not been developed by the New Dealers. (Perhaps the initials CTA have already been preempted.)

Subscribers to AIR CONDITIONING AND REFRIGERATION NEWS have long been aware that this paper has had little faith in many of the New Deal schemes, or in its basic premise that a government bureaucracy can successfully be at once a Moses and a Solomon to so large a body of people. Nevertheless, we are entirely in agreement with the theory that it is the government's job to *protect* its citizens.

Legal Redress for the 'Gypped' Customer

Looking at the matter from a practical standpoint, it does seem reasonable to suppose that the government *can* protect a citizen in the event that he buys a worthless product.

Problems of this nature have taxed the ability and discernment of the most able and conscientious of judges and juries. Even so, it must be admitted that the courts have had a lot of experience in deciding who was the transgressor and who was the aggrieved in a transaction which has already been completed.

Law books are full of case histories in such matters, detailing how the results of such questionable transactions have affected both parties. Decisions on these cases have become part of the "unwritten law" of the land—the law of precedent, upon which the bulk of lawsuits are decided.

It seems fairly obvious that judges and juries would find it far more difficult to predict in advance, the results of a transaction, than it would for them to decide if one of the parties has been wronged after the transaction has been completed.

Purchaser Usually Gets What He Pays For

Thus, while it might not be possible for the government (through one of its agencies) to tell a consumer which of two refrigerators will give him the most for his money, it does seem that the buyer could be properly compensated—through the courts —if a manufacturer has sold him a bum refrigerator, if the salesman has given misleading information, or if advertised claims are not fulfilled.

Eight million users, however, can testify to the fact that, with a remotely few exceptions, a buyer gets just about what he pays for when he acquires any American mechanical refrigerator. The risk of being gypped in such a purchase is small, indeed.

Henry Ford has declared that competition protects the buyer of an automobile. In so highly competitive a market, manufacturers *must* give quality—pressed down and running over—for price paid, in order to stay in business. The household refrigeration business is also highly competitive; and the Ford dictum holds equally true for this industry.

— LETTERS —

Our Refrigerator Tests?

334 Mansfield St.
Chippewa Falls, Wis.

Editor:

I am interested in an electric refrigerator and I am told that you make impartial tests on all makes of boxes.

I am interested in a good moisture-proof box and I am told you issued a bulletin under date of May 27, 1936, on a test issued along these lines. I would also appreciate copies of any other late and interesting tests you have made showing the comparison between the leading makes on the market.

I would appreciate getting this information by return mail, and if there is any charge I am willing to pay for same. WALTER CONGDON

Answer: See editorial in adjoining column.

A Prospect's Dilemma

1439 Quincy Ave.
Racine, Wis.

Editor:

I would like to get some unbiased information regarding two different makes of refrigerators that I am interested in.

One has a porcelain-covered evaporator which I think will cost more to operate, and also has a twin-piston, open-unit compressor, operating at about 525 r.p.m., which I think is better than a high-speed single-piston closed-type unit. The other make is just the opposite in construction as I have mentioned above.

Kindly advise me which is the better in the long run and also which refrigerant is better, sulphur dioxide or Freon for safety and refrigeration.

The local agent for the Westinghouse refrigerators claims that the U.S. Government has purchased over 16,000 of their make, because of its being the most economical under test, of several makes of refrigerators.

Can I depend on this or is it possible that a little political influence was used in the transaction.

I would like to have one of your latest REFRIGERATION NEWS for which I have enclosed 15 cents to cover cost and postage. CONRAD H. ZEMKE

Answer: See editorial titled "Impartial Tests" on this page.

A Subscriber Wants More Complete Specifications

City Electric Co.
Wholesale Electrical Distributors
522 S. Clinton St., Syracuse, N. Y.
April 14, 1937.

Editor:

We have received your copy of specifications of 243 models of 29 makes of household electric refrigerators, dated March 17, 1937, and upon checking same we find that you did not give the I.M.E. rating and the r.p.m. of the compressors for the different makes of refrigerators.

We want to compliment you on the able manner that section No. 2 of your REFRIGERATION NEWS was made up and with the information that we ask, for we believe it will make this bulletin complete.

We have your 1936 REFRIGERATION AND AIR CONDITIONING SPECIFICATIONS which gives this information that we desire for all refrigerators up to 1936.

Do you have an addition to the specification book listing off the information that we desire? If so, what is the cost on same and how soon would this information be released?
S. WEINSTEIN,
Refrigeration Service Dept.

Answer: This year the members of the Refrigeration Division of National Electrical Manufacturers' Association (Nema) decided to publish their own specifications data on 1937 household models. Several items in the schedule of information previously used by the NEWS were omitted from the pamphlet issued by the association.

Some of the manufacturers have indicated their willingness to furnish the additional information desired, but others take the position that the schedule agreed upon by the association is sufficient to meet the needs of the trade.

You will find considerable additional information regarding the convenience features of the 1937 models of several makes published in a separate section (Part 2 of this issue). This data, compiled by the editorial staff of the NEWS, will be especially useful to salesmen.

Now that a standard code for testing and rating household electric refrigerators has been given final approval by the Refrigeration Division of Nema, we are hopeful that definite information regarding the performance characteristics of the various machines will soon be available. We will continue our efforts to secure more complete specifications.

Data on Hazards Of Refrigerant Gases

Compressed Gas Manufacturers' Association, Inc.
11 West 42nd St., New York, N. Y.
March 29, 1937.

Editor:

The manufacturers of refrigerant gases are attempting to compile data on accidents involving the refrigerant gases. We have solicited the aid of the National Safety Council, the U. S. Public Health Service, the National Fire Protection Association, and the Refrigerating Machinery Association. It was suggested to me that I write to you and ask for your comments and assistance also.

The reason for this move is to have available some statistics of an authentic nature to show the extent of the hazard of use of these gases as they actually exist. Much stress has been placed upon these hazards at the hearings in the several cities that have proposed ordinances to regulate the installation and use of refrigerating systems.

The gas manufacturers feel that the fears expressed are not consistent with the actual facts, but they do not have authentic accident data to substantiate their views. I am sure that any additional suggestions that you may feel free to offer will be greatly appreciated. F. R. FETHERSTON,
Secretary.

Answer: Probably the most pertinent material we have is the record of accidents from toxic gases for New York City over a period of about 20 years.

This data was presented by F. A. Eustis of the Virginia Smelting Co. during a hearing on the proposed New York code governing refrigerating equipment last year, and was published in the Jan. 29, 1936, issue of REFRIGERATION NEWS.

Big Help

Hickory, Pa.

Publisher:

Please enter my name on your mailing list for The Red Book 1937 Master Catalog of Air Conditioning and Refrigeration.

Your AIR CONDITIONING AND REFRIGERATION NEWS paper is a big help to any service man. I also will want the News Books that are to be published during 1937. W. B. MILLER

Another Complaint

California Refrigerator Co.
1077 Mission St.
San Francisco, Calif.
April 9, 1937.

W. W. Grainger's catalogs H85 were distributed in San Francisco today by the post office, and on page 92 he is offering the REFRIGERATION ENGINEER'S MANUAL and the MASTER SERVICE MANUAL for $2.91 each.

We thought you had refused to allow anybody to cut the price on your books. Please notify us if we are to sell them for $3 or $2.91 each. We are sending a copy of this letter to the National Refrigeration Supply Jobbers' Association.
CLARENCE F. (SANDY) PRATT,
President.

Answer: See below.

Mad Clear Through

W. W. Grainger, Inc.
Grainger Bldg.—815 Congress St.
Chicago, Ill.
April 8, 1937.

We are mad clear through at your unauthorized publication of our letter in response to your complaint concerning our cash discount. We did not believe this either ethical or legal. The very least you could have done would be to ask our permission.

Your letter indicated you wanted an answer to the complaining jobbers and that was what we gave you. In the future be sure to get our permission before doing anything of like nature. E. O. SLAVIK.

Answer: Listen, mister, you aren't any madder'n we are at your continued unauthorized publication in your catalogs of cut prices on our books. We do not believe such methods are either ethical or legal. The very least you could have done would be to ask our permission.

Your previous letter stated: "I am sincerely sorry that we transgressed in the matter of the cash discount . . . it was purely unintentional . . . we wish to apologize for any trouble we have caused you . . . we are not a cut-price house . . ." We assumed that you were sincere in those statements.

If you'll agree not to publish prices on our books without our permission, we'll agree not to publish your letters without your permission.

More Export Data

"Sohrab" House
235 Hornby Road, Bombay

Sirs:

Upon receipt of this letter, will you kindly change my mailing address to care of the Super-Cold Corp., 266 Gray's Inn Road, London, W.C.1, England.

My subscription expires sometime during the middle part of this year. Will you kindly send me a statement at that time so that I may renew it.

Our distributors, both here in Bombay and in Karachi, are well pleased with your magazine.

I should like to make a suggestion in regard to your publication. I think it will be a good idea if you would devote a half page or a few columns once or twice a month to the export side of the refrigeration industry. I am sure various export managers would be pleased to submit interesting information and useful data which should be of value to all refrigerating concerns engaged in active export work. GEORGE R. LINDAHL, JR.

Air Conditioning in Saskatoon, Saskatchewan

Refrigeration Service
Commercial Refrigeration and Air Conditioning
314 Drinkle Bldg. No. 2
Saskatoon, Sask.
April 15, 1937

Gentlemen:

I would appreciate your sending me, as soon as convenient, copy of the Master Catalogue of Air Conditioning and Refrigeration. I expect to do considerable work in the installation of commercial refrigeration this summer, and am finding a considerable interest in air-conditioning equipment, which is going to increase rapidly as conditions improve in this part of the Canadian north-west.

J. D. MCLEOD

Canadian Reader Wants 'Around the World' Book

Suite 5, 1533 Pendrell
Vancouver, B. C., Canada

Editor:

I have sincerely enjoyed reading "Around the World with George Taubeneck." I have retraced many of my steps with your travel story and found them very true and frank.

Why don't you publish your stories in book form? If and when you do, please advise me for I would like to have a copy. I have missed some of the copies of my News.

May I congratulate you on these stories—your composition, trend and descriptions are put in a most fetching manner.

Don't forget me, if you publish this book. F. BRENTON TAYLOR

Air Conditioning Orders Booked Total $4,830,746 in February

Item	Value of Orders Booked		Total, 2 Mos.
	February 1937	February 1936	Jan.-Feb. 1937
Total	**$4,830,746**	**$2,680,212**	**$9,707,068**
Air Conditioning Group—Total	**2,756,170**	**1,166,592**	**5,394,118**
Unit Systems—			
Self-contained (shipped substantially complete)	201,771	86,898	650,756
Not self-contained (shipped in sections), including refrigerating or cooling medium	826,374	197,149	1,478,087
Central-station Systems, excluding installation if installed—			
Human comfort (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	1,176,708	570,506	2,025,988
Industrial (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	29,708	35,777	103,120
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available	302,533	128,649	658,941
Air washers, including pumps and motors and motors and control where furnished	37,595	41,240	112,945
Air filters (not including sales of filters used with machinery other than fans)	20,747	19,507	37,989
Humidifiers	160,734	86,866	326,292
Fan Group—Total	**$1,360,567**	**$ 797,499**	**$2,725,695**
Fans, including bearings, pulleys or couplings (if furnished)—			
For public and semi-public buildings	134,643	108,299	265,408
For general industrial uses	475,106	230,192	903,788
For mechanical draft	289,287	124,434	506,189
For jobber stocks and unknown uses	59,219	56,044	189,640
Small housed and propeller fans—			
Direct connected small housed blowers with motors and control (merchandise motors)	135,289	74,826	281,512
Propeller fans, direct connected and belted (for ventilation only)	201,150	136,360	430,593
Driving mechanism for general fan use (not reported above)—			
Electric motors and controllers (manufactured or jobbed)	59,870	55,926	133,416
Steam engines (manufactured or jobbed)	6,003	11,488	15,149
Steam turbines (manufactured or jobbed)			
Unit Heater Group—Total	**$ 714,009**	**$ 716,121**	**$1,587,255**
Industrial Type Unit Heaters, including heating element and motors where furnished—			
Equipped with blower-type (centrifugal) fans	85,378	120,122	229,882
Equipped with propeller-type fans	287,486	247,114	637,035
School Room Type Unit Heaters, including heating element and motors and control where furnished	119,719	216,401	241,776
Indirect Heating Surface (not including unit heater surface)—			
Steel pipe coil type (manufactured or jobbed)	1,968	6,039	12,643
Cast iron type (manufactured or jobbed)	19,243	9,217	25,535
Copper or aluminum type (manufactured or jobbed)	200,215	117,228	440,384

*Includes incidental equipment, such as temperature, motor, humidity, and electrical controls, dampers, outlets etc., as are sold with each.

Central Systems Show Sharp Sales Increase

(*Concluded from Page 1, Column 1*)

months of this year, as reported to the Census Bureau, is $9,707,068, compared with $5,038,459 during the same period last year. The 1936 figures originally covered only 98 manufacturers, but were later revised to include data for 27 additional companies.

Orders for air-conditioning systems only did not follow the general decline during the month, totaling $2,756,170, compared with $2,637,948 in January and $1,166,592 during February, 1936.

Self-contained unit systems dropped from a January mark of $448,985 to $201,771 during February, although being far ahead of the $86,896 reported during February of last year. Unit systems not self-contained totaled $826,374 during the month, compared with $651,713 during January and $197,149 during February, 1936.

Central station systems for human comfort rose to a February high of $1,176,708, as against a $570,506 total during the same month of 1936 and of $849,280 during January of this year. Industrial systems fell away to $29,708, after a January mark of $73,412, and were well below the $35,777 in this class during February of last year.

Decrease was noted also in refrigerating systems sold to contractors for separate installation, orders totaling $302,533 during February, compared with $356,408 during January and $128,649 during February last year.

Air washer sales dropped to $37,595, after a January totaling $75,350 and a February, 1936, mark of $41,240; but air filter orders went up to $20,747, after a January total of $17,242.

9 Chicago Restaurants Conditioned in March

(*Concluded from Page 1, Column 1*)

Air-conditioning contracts closed during March were divided as follows:

Restaurants	9
Shoe stores	7
General offices	6
Theaters	6
Clothing stores	4
Funeral parlors	3
Doctors' and dentists' offices	2
Industrial plants	2
Candy stores	2
Printing plants	2
Recreation parlors	1
Clubs	1
Private offices	1
Residences	1
Fur stores	1

Stores led all business classifications in installations during the month, totaling 14 with a combined rating of 81½ tons refrigeration.

Nine restaurants were also conditioned during the month, the jobs totaling 298 tons capacity. Largest of these was in the LaSalle hotel, where a system rated at 200 tons was installed to handle restaurants and lobby shops.

Office installations during the month totaled seven, of which the largest, 400 tons, was put in service in the Lake Michigan Building, 180 N. Michigan Ave. Total of all office installations was 576 tons.

Three funeral parlor jobs, totaling 48 tons, were included in the month's figures, as were two doctors' and dentists' offices, for 1¾ tons, the Chicago Athletic Club, 75 tons, Ray Schalk's Beverly Recreation, 30 tons, and the residence of W. W. Zitzewitz, 6541 N. Mozart, ¾ ton.

Six more theaters were added to the city's already large list of air-conditioned playhouses, the month's installations totaling an even 300 tons. Four industrial installations were made, two each in candy factories and printing plants. The candy plant jobs totaled 55 tons refrigeration, and the printing plants, 130 tons.

Total number of air-conditioning plants installed or contracted for in Chicago is now 1,466.

N. Y. Times Limits Use Of 'Air Conditioned'

(*Concluded from Page 1, Column 2*)

conditioned' may only be used in advertising when the equipment dehumidifies the air and is capable of maintaining a temperature of 70° or 75°," according to the Times' advertising rules.

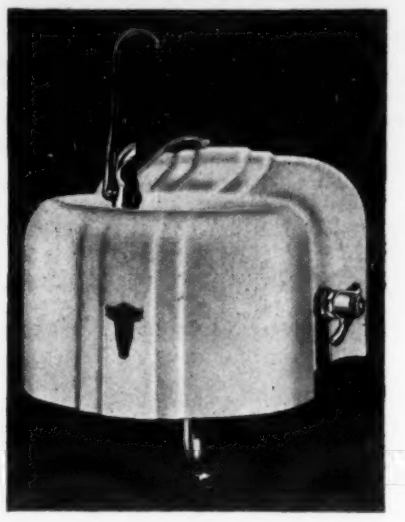
In the past, says Mr. Berger, the Times and other New York papers have received complaints that theaters advertised as "air conditioned" or "air cooled" were not in the accepted definition of these terms, having only small ice-cooling systems or blower systems which did not perform air-conditioning functions.

One theater used the words, "Cooled by Iced Air," in its advertising; others used "Conditioned" and variations of the old theater slogan, "20° Cooler Inside." Few possessed modern air-conditioning equipment performing all functions as defined by the Federal Trade Commission and the industry.

Places using partial cooling systems, the fan-over-ice principle, and simple ice-cooling systems are allowed by the Times to advertise as "cooled" or "ice cooled" or "cooled by iced air" if their equipment performs these functions, but use of the words, "air conditioned," is restricted to "true" air-conditioning equipment.

TEMPRITE ANNOUNCES

A NEW BUBBLER AND GLASS FILLER COMBINATION FIXTURE



This new combination fixture incorporates two separate duties: when the goose-neck is raised it operates as a glass or bottle filler—when the goose-neck is lowered it functions as a bubbler. • When equipped with Model 28-W or 35-W cooler, the fixture can deliver a continuous stream of water cooled from 80° to 45°, a capacity never before attained in drinking fountains. • This new fixture, as an additional feature, makes the superiority of Temprite Water Cooling System even more convincing. • Write for descriptive folder W-l.

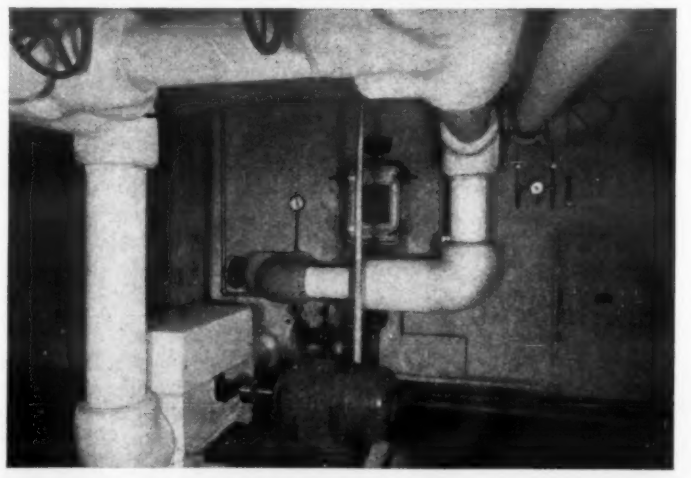
TEMPRITE PRODUCTS CORPORATION

1349 East Milwaukee Ave., Detroit, Michigan

ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

In all air conditioning, it's important to guard COLD LINES

Armstrong's Cork Covering guards cold lines in the Rundel Memorial Building, Rochester, N. Y. Floors and radiator recesses, as well as ducts, air washers, and other air conditioning equipment are insulated with Armstrong's Corkboard.



WHAT happens to refrigeration between compressor and distribution point? Is it safely delivered . . . or is its efficiency wasted through exposed or poorly insulated lines and fittings?

Economical operation of air conditioning equipment depends largely on the answers to these questions. Be sure that the refrigeration in your cold lines is well protected by efficient insulation of Armstrong's Cork Covering and Fitting Covers.

The pure cork granules from which cork covering is made form an effective barrier to the passage of heat. Equally important, cork resists the moisture that is always encountered in low temperature work. Armstrong's Cork Covering fits tightly against the pipe. It is rigid and cannot sag to permit the formation of air pockets where moisture could collect and freeze, reducing efficiency.

Armstrong's Cork Covering is made in 36-inch lengths, in sizes to fit any standard size pipe from ¼-inch up, and in three standard thicknesses. Stocks are conveniently located for prompt service. For complete details, address Armstrong Cork Products Co., Building Materials Division, 1002 Concord Street, Lancaster, Pa.

~ ~ ~

LEFT: *Cold lines in the Dearborn Inn, Ford Airport, Detroit, insulated with Armstrong's Cork Covering and Fitting Covers. In background is the dehumidifier, which is completely insulated with Armstrong's Corkboard.*

Armstrong's CORK COVERING

FOR ALL COLD LINES

SEND FOR THIS

TODAY, over a million TAG Controls are in daily use on gas and electric refrigerators of both domestic and commercial types, as well as in the air conditioning industry. This general acceptance of TAG Products marks them unmistakably for Distributors of Refrigeration Equipment as the top choice for replacement services. The TAG Catalog No. 1136-25 shown here describes completely the line of TAG Snapon Controls and Test Equipment for refrigeration service. Ask for your FREE copy today.

CONSULT YOUR JOBBER ABOUT TAG CONTROLS AND TEST EQUIPMENT

C. J. TAGLIABUE MFG. CO.
Park & Nostrand Aves.
Brooklyn, N.Y.

Gentlemen: Please send me a copy of the new 1937 TAG Snapon Control Catalog No. 1136-25.

Name .....

Address .....

City & State.....

use this COUPON

For the Air-Conditioning Distributor-Contractor

This is No. 11 in the series, "How to Select and Install Air-Conditioning Systems" by T. H. Mabley, chief engineer for a Detroit air-conditioning distributor.

Previous articles in this series have been published as follows:

Case No. 1, A Single Office (Jan. 6); No. 2, A Conference Room (Jan. 13); No. 3, Residence System with Room Cabinets (Jan. 20); No. 4, Typical Commercial Application—A Shoe Store (Feb. 3); No. 5, A Beauty Parlor Feb. 24); No. 6, A Coffee Shop (March 3); No. 7, A Process Job (March 10); No. 8, A Doctor's Suite (March 17); No. 9, Central System for a Group of Offices (March 31); No. 10, A Residence (April 7; and No. 11, Upper Floor of a Residence (April 14).

HOW TO SELECT AND INSTALL AIR-CONDITIONING SYSTEMS

By T. H. Mabley, Chief Engineer
Mechanical Heat & Cold, Inc., Detroit

Case No. 12
A Men's Apparel Store

The air conditioning of the men's apparel store, as shown in Fig. 1, has a number of features which apply to similar commercial establishments.

The establishment occupies a portion of the ground floor of a large store building, and almost the entire area to be conditioned is used for sales space. The basement directly underneath is used for storage and alteration work space. Both heating and cooling is to be provided for the sales space. This year-around temperature control necessitates a consideration of ventilation.

Since the store is located in a downtown area where dust naturally comes in, filters will be used to reduce the damage that usually is done to goods that are in stock from dirt found in the surrounding air.

The problem, therefore, is one involving all the major functions of air conditioning except humidification. This item is not being considered for the present in this commercial installation. High relative humidities, while desirable from the standpoint of comfort and health for employes, might cause undesirable condensation on the show windows.

Design conditions selected consist of an inside maximum temperature of 82° dry bulb and 50% relative humidity, and a minimum of 70° dry bulb.

The outdoor design conditions in this case will be 98° dry bulb and 76° wet bulb maximum with a minimum of 0° dry bulb. By using this data as a basis, the heat gain and heat loss may be computed.

In the heat-loss calculation the major factor will be ventilation of air. Since the store is well protected and almost surrounded by heated areas, the normal infiltration from the front door will represent a comparatively large figure.

If we assume that normal infiltration will be equal approximately to 2 air changes per hour, we will have to allow for 800 c.f.m. of outside air in heat-loss computation.

With an estimated occupancy of 40 persons there will thus be 20 c.f.m. of fresh air per person, ample for this type of business where no exceptional quantity of smoke or odors is present in the conditioned space.

In heat-gain tabulation the biggest item is light load. The store is well equipped with a large amount of indirect lighting placed in the conditioned area. Fresh air also will represent a fair portion of the heat gain.

Because of the large quantity of heat thrown off by electric lights in the sales space it will be necessary to provide means for reducing inside temperature when weather outside is mild, but not warm enough to necessitate operation of the cooling equipment. This should be done by introducing a large volume of cool air. For this reason the fresh air intake must be capable of handling full air capacity of the conditioner.

A careful study of physical details of this store shows that a central type conditioner can be mounted on a platform located directly over the stairway to the basement in the rear. This unit can be connected to a duct system installed with a main trunk running the length of the store, and near ceiling height along one of the walls of the conditioned space.

After heat gain and heat loss have been figured, reference is made to the manufacturers' performance data sheets, and a conditioning unit is selected that will give an output necessary to meet these requirements.

The unit will be equipped with a direct-expansion cooling coil, steam-heating coil, filters, and a belt-driven double-wheel centrifugal-type blower. Humidifying sprays may be installed at some future time should the owner so desire.

The "vertical type" unit has the blower mounted directly above the coils, and the air flows vertically upward as it passes from the filter through the coils into the blower.

From the blower the air is discharged through two outlets in the top of the unit. To these outlets is connected the main supply duct. A canvas connection is used at point of connection to eliminate transmission of vibration from unit to duct system.

The long sweep elbows employed to direct air from the unit to the horizontal run of the supply main will be provided with "sweep sheets," or some other form of curved turning blades, spaced regularly across the cross-section of the elbow to assure a free flow of air without excessive losses from unnecessary turbulence in the free flow of air making the turn.

The supply duct system here can be sized by the velocity method. By using a graduated scale of velocities as the air is directed to the most distant point in the system, a fairly definite distribution of air with minimum practical static pressure drop will be assured.

For this reason we will start off with 1,100 f.p.m. maximum, and taper off the air velocity gradually until we have a value of 600 f.p.m. in the last section.

By this arrangement we can be certain that there will be no objectionable air noise in the duct system. These velocities are below the serious noise problem level.

The main supply duct will fit tight against the wall and will be sized to extend out just far enough to permit the installation of a curtain wall between the ceiling and the top of the display cases located directly below the duct. This false wall is intended to conceal all the sheet-metal work and will be flush with the front of the show cases, giving a neat appearance in keeping with the store's interior trimmings.

The recirculation grille will be installed at the floor in the rear partition between sales space and stairway. It will be connected by a riser carried along the back of the partition and thence to the unit.

The fresh air for the system will be brought in from the rear of the building at the highest possible point above the ground level. This intake should be equipped with an automatic motor-operated damper designed to close part way when the outside temperature gets too cold, and to close completely when the blower is stopped. This arrangement prevents possible freezing of the heating coils.

The system will be controlled by a manual switch to start and stop the blower, with a thermostat for room-temperature regulation. The thermostat in winter will operate a motorized valve in the steam supply line to the heating coil.

In the summer this same thermostat can be used to operate the cooling compressor by means of an auxiliary relay or a switch attached to the steam valve. In the latter instance the steam supply will have to be turned off at a point ahead of the valve during the summer months.

Another thermostatic control should be installed in the discharge outlet from the conditioner to maintain a minimum discharge air temperature during the winter months. This is accomplished by interlocking the thermostat with the steam valve and room thermostat.

The usual setting of such control is approximately 65° or some temperature that will permit continuous operation of the conditioner for ventilation and circulation without danger of cold blasts of air striking any occupants.

In locating the discharge outlets it is planned to distribute the air about equally over the entire conditioned area, bearing in mind the possibility that before the final air balance is made the owner may require a slightly larger supply of cooled air at the front of the store, to give a "cool" effect to patrons entering.

For the heating cycle we have already anticipated demand for a large quantity of air near the front door to offset normal filtration of cold air at this point.

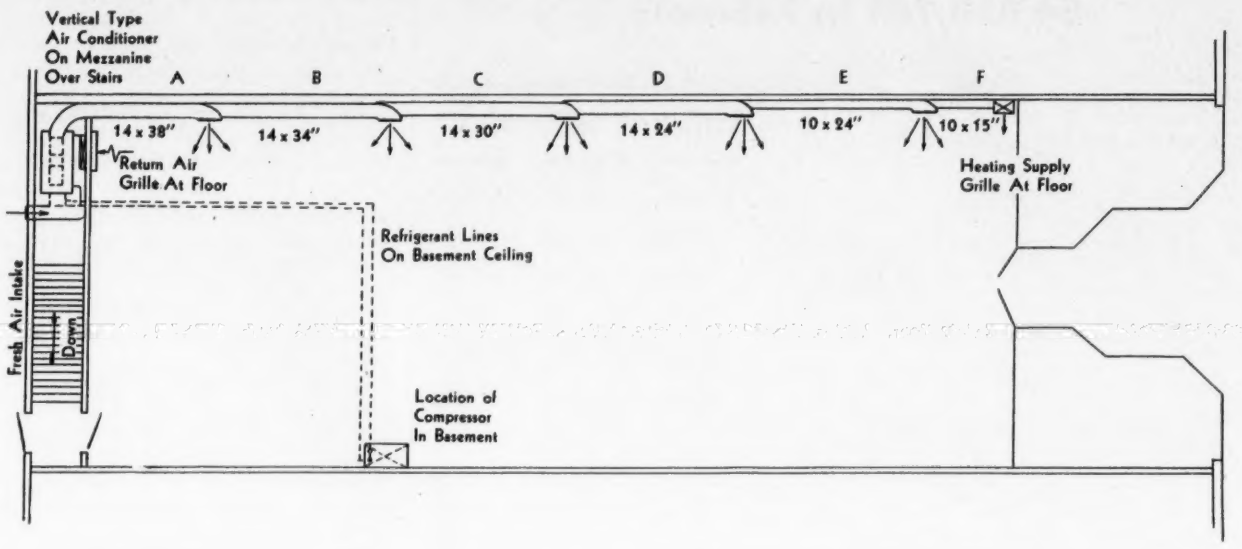
For this reason a discharge outlet is installed, which may be used in the winter-time only, located at the floor and as close as practical to the front door.

In addition to heating coil in the conditioner, it is usually advisable to install an additional booster coil just behind the discharge grille here. The steam supply to this coil should be independently controlled by a thermostat and motor-operated valve situated on the wall very close to the exposed front zone.

The room-temperature controls will be located on the same wall with

(Concluded on Page 15, Column 1)

Layout for Men's Apparel Store Installation



Duct Calculations

Section of Duct	C.f.m.	Velocity (F.p.m.)	Diameter of Equivalent Round Pipe (Inches)	Actual Dimensions (Inches)
A	3,600	1,100	24.8	14 x 38
B	3,000	1,000	23.7	14 x 34
C	2,400	900	22.0	14 x 30
D	1,800	800	20.3	14 x 24
E	1,200	700	16.7	10 x 24
F	600	600	13.4	10 x 15

	B.t.u.
Total Heat Loss	74,000
Total Heat Gain	105,000
Ratio of Sensible/Latent	.83.

	C.f.m.
Total Air Recirculated	2,800
Total Fresh Air	800*
Total Supply Air	3,600†

*Two air changes; †9 air changes.

You can MAKE MORE MONEY
out of refrigeration and air conditioning work with these IMPERIAL PRODUCTS

VALVES FOR EVERY PURPOSE
No. 207-C Sylpak Valve
No. 223-C Pressure Relief and Emergency Valve
No. 193-CS Packless Valve
No. 57-C Back Seating Compressor Valve

IMPERIAL STRAINERS PROTECT THE SYSTEM
No. 249-C Sealed Strainer with Asbestos Sack
No. 248-C Small Size Sealed Strainer
No. 48-C Forged Brass Line Strainer
No. 184-C Service Strainer with Renewable Screen

DEHYDRATORS TAKE OUT THE MOISTURE
No. 313-C Refillable Dehydrator with Demountable Flange
No. 385-C Flanged Dehydrator with Dispersion Tube
No. 31-C Small Dehydrator for Permanent Installation
No. 518-C Large Steel Dehydrator

WHEN it comes to refrigeration and air conditioning work this is a rapidly changing world. The way an installation or service man does a job today is not the way it will be done next month or next year.

That's why the Imperial 1937 line of items for refrigeration and air conditioning work is bigger and better than ever. Every Imperial item has been developed to fill a definite need and every one of them has been thoroughly tested in service work. They will help you turn out a better job for new work and they will prove extremely valuable in service work.

Every dollar saved in installation costs and every dollar saved in service work is just another dollar that can go over on the *profit* side of the ledger. You want to make money for yourself and for your firm. One of the easiest ways to do it is to see that you are equipped with the latest devices that will save your time and give your customer a better job. Imperial Products will help you do both.

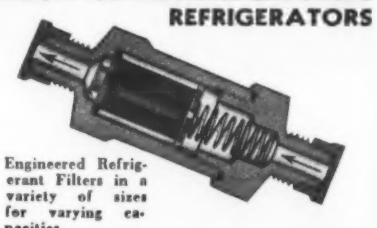
IMPERIAL BRASS MFG. CO.
565 S. Racine Ave., Chicago, Ill.

The new 1937 Imperial catalog of air conditioning and refrigeration products is out. *Write for your copy.*

Write or call your jobber for prices and complete information on these and other Imperial products.

IMPERIAL
Refrigeration and Air Conditioning Products

THE NEW ZENITH REFRIGERANT FILTER
. . . FOR SULPHUR DIOXIDE FREON OR METHYL CHLORIDE REFRIGERATORS



Engineered Refrigerant Filters in a variety of sizes for varying capacities.

FINER SPACINGS THAN ANY ASBESTOS SACK OR WIRE SCREEN

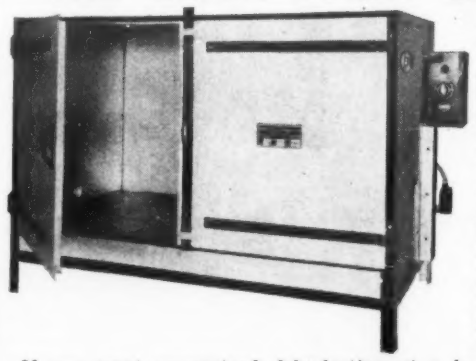
LOWER PRESSURE DROP!

BETTER PROTECTION!

Special features include: Patented Element—Easily and Quickly cleaned—Easy to Install—Insures Positive Protection from Dirt in the Refrigerant Liquid—Corrosion-proof, Leak-proof and Ample Capacity. Write for full details.

ZENITH CARBURETOR CO.
Subsidiary
BENDIX AVIATION CORP.
Detroit, Michigan.

"THE OVEN EVERY SERVICE STATION SHOULD HAVE"



Service Managers of prominent refrigeration companies recommend Despatch Ovens because they dehydrate uniformly and thoroughly with a minimum of time. Also, these ovens are very economical to operate and LOW IN PRICE.

Here is an all purpose oven for service station work. You can use it for dehydrating refrigerator units, for baking and drying coils, for baking and drying finishes, and for general service and repair work requiring uniform and positive results.

If you want guaranteed dehydrating at a low cost don't attempt to duplicate Despatch performance with a home made oven using high temperature elements.

Despatch Type C Ovens are arranged in three popular sizes with either gas or electric heating systems. There is a Despatch Oven for your service station.

Hundreds of these ovens are now being used by independent service shops and by dealers and distributors of prominent refrigerator manufacturers such as Frigidaire, Crosley, Kelvinator, Norge, Gibson, General Electric, Sunbeam, Copeland and others.

Write today for your copy of the Despatch bulletin illustrating and describing these popular low priced service station ovens. Bulletins will be **mailed** to you promptly.

DESPATCH OVEN CO., Minneapolis, Minnesota
Manufacturers of a complete line of production and service station ovens for dehydrating and finish baking.

Selecting Equipment For Apparel Shop Installation

(*Concluded from Page 14, Column 5*)

the discharge duct, but at a 5-foot level from the floor.

A simplification of this control scheme for heating may be used wherein the blower is equipped with a magnetic starter and the room thermostat is used in winter to start and stop the blower as heating is required. With this arrangement the motor valves are eliminated and steam is kept on the coils all the time. The motor-operated damper on the fresh air should not be eliminated, however.

The cooling control will be the same and a manual switch will be provided to turn the blower on for constant operation when either ventilation or cooling is desired after the steam supply has been turned off manually.

This alternate arrangement naturally does not have the flexibility or convenience of the other system and should be considered only if a definite saving must be made below the original price of the control system.

The installation is completed by placing the 10-hp. refrigeration compressor selected for this job in the basement stock space, connecting it to the conditioner with proper-sized refrigerant piping. More definite consideration of sizing of refrigeration liquid and suction lines will be brought out in future cases.

Nine New Janitrol Field Representatives Named

TOLEDO—Appointment of nine additional field representatives for Surface Combustion Corp., manufacturer of Janitrol air-conditioning equipment, has been announced by Eugene A. Weaver, space-heating sales manager.

Wallace Adams has been placed in the Kansas City office and Charles F. Schlichter in Washington territory. Both were formerly with Washington Gas Light Co., the former for several years in gas heating work, the latter as house-heating supervisor.

Raymond E. Vernon, Atlanta representative, Guy F. Brown, Chicago office, and Harry Reid, Chicago and surrounding territory, were with Peoples Gas, Light & Coke Co. of Chicago.

Herbert A. Gross, formerly with Columbia Gas & Electric Corp. for several years, has been appointed to the Minneapolis office; Ernest Smart, with several years gas heating experience in Rochester and Canadaigua, N. Y., to Westchester county, N. Y.; Lawrence J. Monahan, with upwards of 10 years experience with Equitable Gas Co., Pittsburgh, to Buffalo; and DeWitt T. Preyer, for three years with New York State Electric & Gas Corp., Ithaca, N. Y., to Brooklyn.

Pacific Markets Portable Window-Sill Conditioner

CHICAGO—Designed especially for hotel window-sill installation but having many of the features of its companion console models, Pacific Conditionaire Model 20 has been placed on the market by Pacific Mfg. Corp. The new unit was exhibited at the recent Midwest Hotel Show at the Sherman hotel.

Completely self-contained and portable, the new window-sill conditioner operates with a ½-ton air-cooled compressor, using a ½-hp. capacitor motor wound for use on either 110 or 220 volts a.c. It is also available for direct-current operation if desired.

Installed simply by plugging it in to the nearest light socket, the new unit will condition 1,500 to 2,500-cu. ft. of space, dissipating approximately 6,000 B.t.u.

No connection to water lines is required, so additional operating economy is claimed for the unit.

Three other models, 30, 40, and 50, are included in the Pacific Conditionaire line. Model 30 serves the same area and has the same capacity as the window-sill unit, except that it stands on the floor. Humidifier is optional on this model.

Model 40, known as the portable deluxe console, will serve 2,500 to 5,000 cu. ft. of space, dissipating approximately 9,000 B.t.u., and using a ¾-ton air-cooled compressor and a ¾-hp. capacitor motor, with humidifier optional.

Largest model, No. 50, will handle 5,000 to 7,500 cu. ft. of space, dissipating approximately 12,000 B.t.u. This unit uses a 1-ton air-cooled compressor and a 1-hp. motor, with humidifier optional.

Functions claimed for the units are cooling, dehumidification, cleaning, circulation without drafts, and humidification in winter in areas and climates where relative humidity is low.

All units carry a one-year guarantee.

Gar Wood Establishes Sales & Service Plant on Long Island

MINEOLA, L. I.—A product showroom, sales office, installation and service plant, warehouse, and sheet metal shop are being established in a reconditioned building here as an operations base for local activities of the air-conditioning division of Gar Wood Industries, Inc.

The company's air-conditioning activities in this locality previously were carried on from the main plant in Long Island City.

Osteopaths Commend Properly Installed Air Conditioning

NEW YORK CITY—The Eastern Osteopathic Association, during its seventeenth annual convention at Hotel Pennsylvania, unanimously adopted a resolution commending properly installed air conditioning, but warned that "improper forced circulation of conditioned air is a threat to public health."

The resolution, introduced by Dr. George W. Riley, urged public health officials to inspect air-conditioned places, such as theaters, concert halls, and vehicular transports, to prevent "ill-directed drafts."

Baltimore Recreation Center Conditioned by Carrier

BALTIMORE—The Recreation Center, Baltimore's largest bowling establishment, has been air conditioned with Carrier equipment. Installation was made by Air Conditioning, Inc., Carrier distributor.

York Equipment Conditions Bridgeport Restaurant

BRIDGEPORT, Conn.—York year-around air-conditioning equipment has been installed in Rolleri's restaurant by Connecticut Oil Heating Co. of Hartford and New Haven, distributor.

Jacksonville Hotel to Feature 'Finger Tip' Conditioning Control

JACKSONVILLE, Fla.—Featuring "finger-tip" control of his own comfort by the guest, the George Washington hotel here is to be air conditioned this summer by a 300-ton Carrier system.

"The facilities will be so installed that their use will be optional with the guests," declared Robert Kloeppel, director of the hotel. "By use of this control method, patrons may control the air conditioning of their rooms in accordance with their wishes."

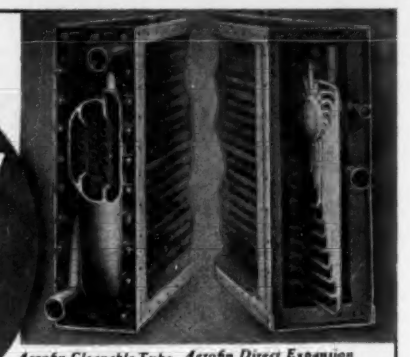
The installation of the new system will make this hotel the first in the state to be completely air conditioned, it is said, as it adds meeting rooms, lobbies, dining rooms, recreation rooms, and 280 guest rooms to the taproom and barroom which already were air conditioned. According to Mr. Kloeppel, installation work will begin soon under the supervision of Carrier engineers, at a cost totaling almost $100,000.

A Carrier centrifugal refrigerating machine of 300-ton refrigerating capacity will be used, while approximately 7,000 lbs. per minute of air will be conditioned and supplied for the consumption and comfort of the customers. It is said that more than 60,000 lbs. of galvanized sheet steel will be required for fabrication of ducts.

Canadian G-E Conditions Toronto Model Home

TORONTO, Ontario, Canada—Canadian General Electric Co., Ltd., installed a G-E oil-fired warm air conditioner in a recently opened model home at 117 Dewbourne Road here.

AEROFIN
Heat Exchange Surface
PROVED PERFORMANCE



Aerofin Cleanable Tube Unit with Removable Header — Aerofin Direct Expansion Unit Centrifugal Header Type

Universal Aerofin — Aerofin Continuous Tube Water Coil — Aerofin Direct Expansion Unit — Flexitube Aerofin

AND A COMPLETE LINE For Every Requirement

AEROFIN light-weight fan system heating and cooling surface offers just about everything that architects, engineers and heating contractors have always wanted. For more than fifteen years Aerofin has been the standard by which heat exchange surface is judged. If it is Aerofin it is the ultimate in service, satisfaction and reliability. That is why it is the dependable choice of men engaged in air conditioning, heating or ventilating.

More Aerofin heat exchange surface is sold than any other type—more than 45,000,000 feet of it since Aerofin was first introduced. Forty-five million feet of experience is in the manufacture of Aerofin.

Investigate Aerofin—today. Send to our home office or to any of our branch offices for descriptive literature. Take advantage—without obligation—of the service our engineers can render. Their prompt effective technical cooperation on any problem is at your disposal.

AEROFIN is sold only by Manufacturers of Nationally Advertised Fan System Apparatus. List upon Request

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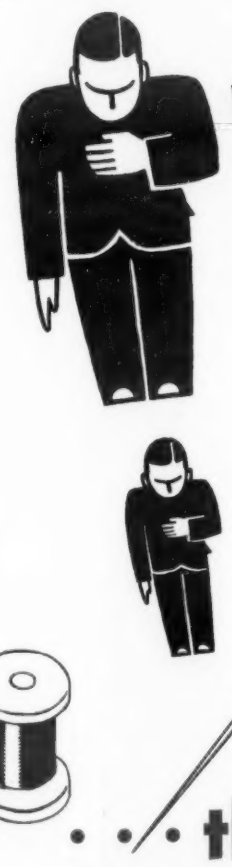
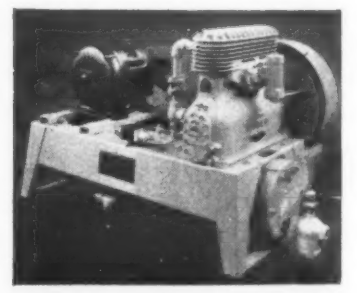


BIG and small

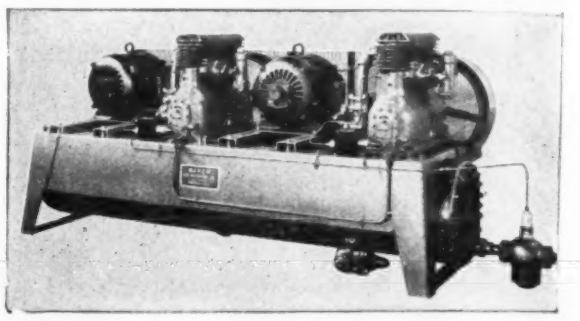
. . . they're Easy to Fit with BAKER'S COMPLETE LINE

● Selling problems are simplified with the Baker line. Baker offers 77 models for Freon and Methyl Chloride—the most complete on the market—ranging from the sturdy two cylinder ¼ H.P. unit to the 60 H.P. size in single machine units all equipped with genuine Timken tapered roller bearing. Larger capacities are offered in ammonia compressors to 100 tons in single units. Baker distributors are ready to serve every air conditioning and refrigeration prospect—big or small—because Baker's complete line means they can fit every job exactly.

A few territories for Baker dealers are still open. Inquiries are invited from responsible parties.



Baker four cylinder self-contained unit with full automatic control. Designed for Freon or Methyl Chloride.



Baker dual four cylinder type water cooled Freon or Methyl Chloride unit with automatic capacity control to insure operating economy. Available in a wide range of capacities.

BAKER
ICE MACHINE COMPANY, INC.
1506 Evans Street
OMAHA, NEBRASKA
Branch Factories: Fort Worth, Los Angeles, Seattle
Eastern Sales: New York City
Central Sales: Chicago

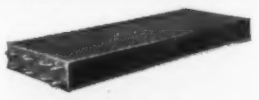
AUTHORITY ON MECHANICAL COOLING FOR OVER 30 YEARS

McQUAY

Suspended Type PRODUCT COOLERS

Product Coolers

McQuay Product Coolers are primarily designed to obtain high humidity condition in refrigeration storage rooms . . . for walk-in-coolers, storage rooms, and for all types of fixtures where forced air circulation is desirable.



Evaporator Coils

Evaporator Coils of Standard sizes, as well as specially designed for any specific commercial refrigeration application . . .

WRITE for New Catalogs on McQUAY Unit Coolers, Comfort Coolers, Cabinet Concealed Radiation, Refrigeration Coils, Ice Cube Makers, Air Conditioning Coils, Blast Coils, Combination Heating and Cooling Units, Suspended and Floor Type Blower Coolers, Cabinet Floor Type Room Coolers, Etc.

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MINNEAPOLIS MINNESOTA

Thermo Valves
Expansion Valves
High Pressure Float Valves
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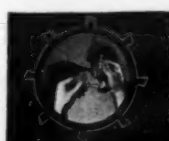


Absolute precision is imperative in every step of production of A-P Thermostatic Expansion Valves.

AUTOMATIC PRODUCTS COMPANY

Climax Appoints Eight New Distributors

INDIANAPOLIS — Appointment of eight new distributors of Climax self-contained air conditioners has been announced by Arch H. Olds, sales manager of Climax Machinery Co., manufacturer.

New distributors include: Ackerman Electrical Co., Grand Rapids, Mich.; H. B. Shank Co., Fort Wayne, Ind.; Ontario Electric Co., Buffalo; Motor Power Equipment Co., St. Paul; Klaus Radio & Electric Co., Peoria, Ill., and Davenport, Iowa; Houston-Starr Co., Pittsburgh; Frank H. Clay Co., Kalamazoo, Mich., and Burns Radio Co., Dayton.

Climax representatives in charge of distributor appointments are: Fri Giant Corp., Newark; James E. Thompson, Boston; H. O. Stark, New Orleans; Herbert L. Bohon, St. Louis, and Deane Chivington, Chicago.

The company has recently issued a new folder describing its complete line of units, available in capacities of 3/10 to 1 1/10 tons, and listing their advantages for home and office use.

2 Large Air-Conditioning Jobs Under Way in New Orleans

NEW ORLEANS—Two large air-conditioning systems will be installed here, one in Hotel Jung, the other in the 10-story United Fruit Building. American Ice Machinery Corp. was awarded the hotel contract for $121,-397. Work on the United Fruit Building has already been started by York Ice Machinery Corp., cost of installation being estimated at $50,000.

Air Conditioning to Lower Steel Costs, Johnston Says

EVANSVILLE, Ind. — Prediction that air conditioning will make possible more economical production of better steel was made by Dr. John Johnston, U. S. Steel Corp. research department head, in an address to the Evansville Science Club April 9.

One of the major handicaps of producing steel by the blast furnace process, said Dr. Johnston, is the change high temperatures cause in the moisture content of air. Air conditioning, he claimed, would overcome this difficulty.

Minneapolis-Honeywell Moves Milwaukee Branch

MILWAUKEE—Minneapolis-Honeywell Regulator Co.'s local branch has moved to larger quarters at 2405 N. Maryland Ave. Charles E. Cochran is manager.

Bell Opens Air-Conditioning Sales & Service Shop

FRESNO, Calif.—Charles G. Bell, for the past 10 years associated with local refrigerator dealers, recently opened a sales and service establishment here.

With a staff of six, four of whom are salesmen, Mr. Bell is specializing in domestic and commercial air conditioning and is operating a shop for servicing and repairing refrigeration equipment. Site of the store has been modernized and fixtures installed.

Advanced in Kerotest Organization

GEORGE R. POSTLEWAIT (left), WILLIS A. SIEGFRIED, and ALBERT H. FINE, have received new appointments in the Kerotest Mfg. Co.'s field organization. Mr. Postlewait is representative in several central states, Mr. Siegfried is Southeastern representative, and Mr. Fine replaces Mr. Siegfried as assistant in the New York office.

COMMERCIAL REFRIGERATION

Peerless 'Off-Center' Coils Keep Pittsburgh Market's Fish Frozen

PITTSBURGH — Used exclusively for the storage of frozen fish, the large walk-in cooler of Fisher's Wholesale Fish Market is equipped with low temperature Peerless "Off-Center" freezer coils, which maintain an average temperature of 15° F. the year around.

The coils, ranged around the upper part of the cooler walls in perimeter fashion, have special interior "rifling" to swirl the refrigerant liquid as it passes through the tubing, and triple-thick aluminum fins, attached at 2-inch intervals.

Three inches of space is allowed between the coils and the cooler walls, for proper air circulation. Provisions are also made for hot gas attachments, permitting defrosting in about an hour's time. This is necessary so that operation of the cooler will not be impaired.

H. S. McCloud of Williams & Co., Inc., Pittsburgh refrigeration supply jobber, designed the installation, which was sold to the market by the Pittsburgh representative of Cincinnati Butcher's Supply Co.

Four-Month York Sales Up 93% over Previous Year

YORK, Pa.—Dollar volume of sales for the first four months of York Ice Machinery Corp.'s fiscal year totaled $6,145,250, an increase over the corresponding period last year of 93%, it has been reported by S. E. Lauer, sales manager.

Sales in January were the greatest for any one month in York's history, Mr. Lauer declared.

Super-Cold Midwest Co. Opens Branch in Cleveland

CLEVELAND—Super-Cold Midwest Co., Chicago distributor of Super-Cold refrigerated display cases and equipment, has opened a branch office in Cleveland under the management of William Parker. Mr. Parker has been associated with Super-Cold sales in Chicago and Columbus, Ohio.

New York Florist Chain Uses York Equipment In Park Ave. Store

NEW YORK CITY—M. Goldfarb, My Florist, Inc., operating a chain of florist shops in the eastern metropolitan area, has installed York refrigeration equipment to cool the display case and storage room of its recently opened Park Ave. branch.

A 1½-hp. Freon-12 condensing unit refrigerates the display box, while a ¾-hp. Freon-12 unit controls the temperature and humidity of the storage space. Purpose of the installation was to retain the original freshness of the flowers despite outside weather conditions.

Results obtained by the equipment have already proven its value, according to William Harris, vice president of the Goldfarb chain. Not only has patronage of the shop increased, Mr. Harris declares, but a noticeable decrease has been effected in loss from spoilage and deterioration of flowers due to fluctuations of temperature and humidity.

Starting in 1929 with a single shop, Mr. Goldfarb rapidly expanded his organization until he now owns a dozen outlets in New York, Philadelphia, and Newark. The establishment grows its own flowers in 52 greenhouses, and sales last year totaled over $2,000,000.

New Alabama Cold Storage Plant Ready for Operation

MOBILE, Ala.—The new $800,000 cold storage plant and fruit terminal of the Alabama State Docks is ready to be placed in operation.

The new plant, erected as a WPA project, has an approximate capacity of 250 trainloads. Five stories high, 144 ft. long, and 140 ft. wide, it is divided into 12 rooms constructed of reinforced concrete and brick, and is insulated with from 4 to 8 inches of cork.

The plant has a "sharp freezer" space for eggs, butter, meats, vegetables, and other highly perishable produce, with higher temperature rooms for fruits, cabbage, and other vegetables not too sensitive to medium-low temperatures.

268-Ton Refrigerating System Installed in Oil-Refining Plant

SANTA FE SPRINGS, Calif.—Refrigerating equipment of 268-tons capacity recently was installed in the plant of Wilshire Oil Corp. here, as an aid in the refining of the 5,900 barrels of oil processed there daily.

In the refining process, the cracked gasoline distillate is treated with acid, using a mechanical mixing and centrifugal separation of the acid sludge from the treated distillage. This mixing of acid and oil causes a large rise in temperature, due to heat of the acid reaction, which calls for close control of temperature.

Equipment used consists of two closed type, vertical-acting refrigerating machines and two compressors, furnishing 268 tons of refrigeration, together with three shell-and-coil oil chillers of special design, and three Stratford Contactors.

To insure the required temperatures, 30° F. in the first two stages and 20° in the third stage, a control valve was installed at each of the three stages in the system's operation. Specifications called for control temperatures within a range of plus or minus 1° F. In operation, however, variance was held to within ½° F.

Controlling temperatures desired in the contactors resulted in an overall yield of 92% to the raw pressure distillate, compared with a yield of 75° F., without temperature control, tests showed.

West Coast Using More Truck Systems, Farnsworth Says

LANSING, Mich.—Increased interest in Kold-Hold refrigeration systems for trucks, especially for high-temperature bodies for the transportation of meats, milk, cheese, and other perishable products, is reported by W. G. Farnsworth, general manager of Kold-Hold Mfg. Co., following a three weeks' trip covering Texas and the Pacific Coast states.

Mr. Farnsworth leaves this week on a trip covering Atlanta, Jacksonville, Fla., and the southeastern states.

Counter Freezer Keeps Chicago Schoolboys in Malted Milks

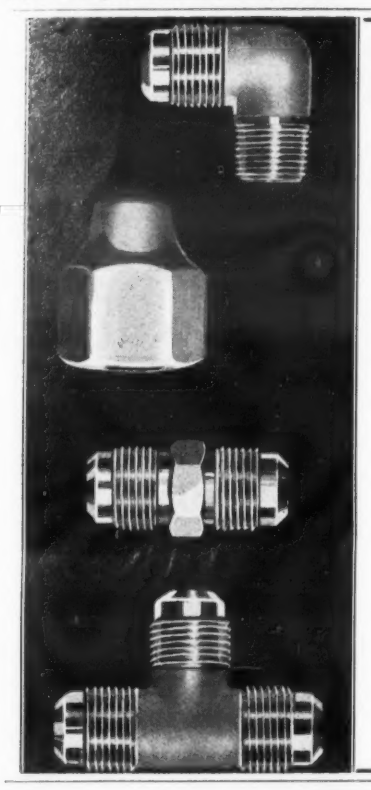
CHICAGO—A counter freezer, recently installed in the cafeteria of Lane Technical high school, turns out an average of 4,000 gallons of frosted malted milks weekly to meet the demands of the 8,700 boys who attend the institution.

Daily sales average 1,600 seven-ounce glasses, many of the boys using the drink as a between-meals beverage or to supplement the lunches brought along from home.

Installation of the frosted malted machines has not in any way lessened the consumption of ice cream, which continues to be the most popular dessert, the cafeteria's management reports.

Simpson & Bennett to Retail Hill Cases in Birmingham

BIRMINGHAM, Ala.—Simpson & Bennett, commercial refrigeration dealer here, has opened for business, handling Hill display cases and other equipment.



Seepage-Proof
FITTINGS
"Built Right to Stay Tight"

Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

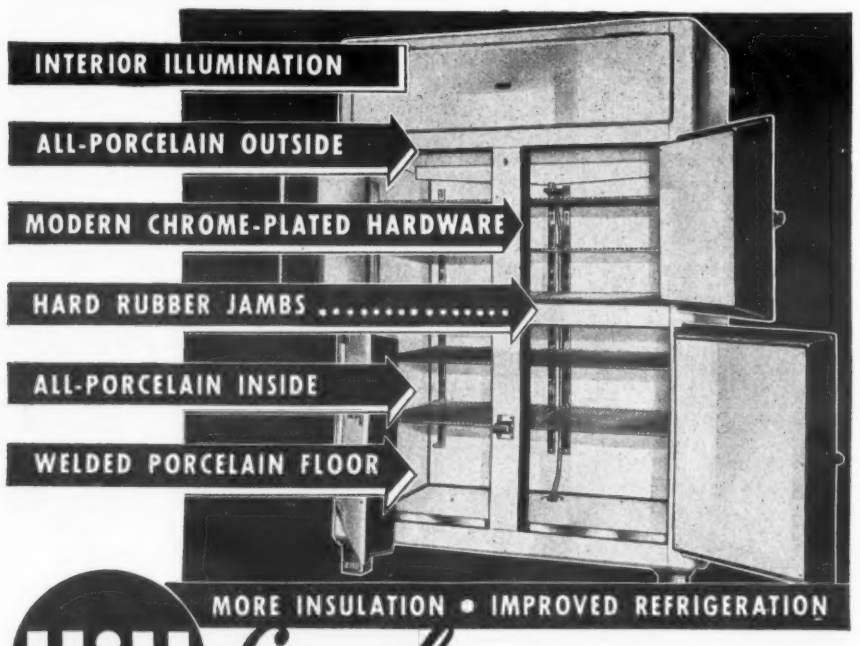
Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

Special fittings made to order.

Commonwealth fittings are correctly designed, carefully machined, and tube seats are protected in shipping.

25 years of service to the industry.

COMMONWEALTH BRASS CORPORATION
Commonwealth at Grand Trunk R. R.
DETROIT, MICH.



Hill for those WHO WANT THE BEST

Hard commercial use in hot kitchens makes the *best* Reach-in Refrigerator the most economical — the least costly to operate, the longest lived, and the most convenient. That is why **Hill** Reach-in Refrigerators are *easier* to sell to hotels, restaurants, hospitals, institutions and bakeries.

• Send for 32-page illustrated catalog, using your business letterhead. 168

HILL PRODUCTS DIVISION
C. V. HILL & CO., INC., TRENTON, N. J.

86 CONDENSING UNITS
FROM 1/6 HP TO 30 HP

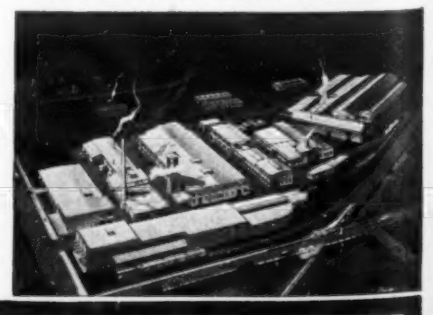
• Curtis makes 41 air-cooled units in sizes from 1/6 HP to 5 HP, inclusive, and 45 water-cooled units in sizes from 1/3 HP to 30 HP, inclusive.

Curtis water-cooled units may be obtained with counterflow condenser in sizes from 1/3 HP to 15 HP — and with cleanable shell and tube condensers in sizes from 3 HP to 30 HP. Each unit is built to meet specific requirements — separate types for air conditioning. Special types also available for ice cream cabinets, refrigerated trucks — self-contained units for display cases, etc. Unit coolers and coils to match are always available.

The Curtis line is complete — with a unit to meet the needs of most any type and size of installation — whatever your requirements. Complete specifications and installation data gladly sent on request.

Represented in Canada by
Canadian Curtis Refrigeration Co., Ltd.
20 George St., Hamilton, Ontario

20 Acres of Plant Facilities



CURTIS
CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 KIENLEN AVE. ST. LOUIS, MO.

— AIR CONDITIONING NEWS —

Complete Air-Conditioning Installation In Hospital Featured by 'Individualized' Control and Use of Lithium Chloride

BOSTON—In suburban Brookline, on the top of Corey Hill is a hospital that is claimed to be the only one in the world now completely air conditioned. It is known as the Corey Hill hospital, and it recently has been re-opened after having been completely renovated and air conditioned.

Some hospitals have winter air conditioning in some of their rooms, generally the operating rooms. But in this hospital, every one of the sixty patients' rooms and the two operating rooms with adjoining suites is equipped with year-around air conditioning, including automatic temperature and humidity control, air filtering, and automatic control of air movement. Each room has its own separate controls.

The system was installed by the Cooling and Air Conditioning Corp., a subsidiary of the B. F. Sturtevant Co.

FOR ARTHRITIS CASES

The hospital is under the direction of Dr. Albert H. Young, a specialist in arthritis and rheumatic diseases, and the hospital is intended primarily for patients suffering from these ailments. Before deciding upon the type of air-conditioning system to be installed, Dr. Young made a study of the subject from the standpoint of patients suffering from these diseases, his first task being to determine the range of temperatures and relative humidities most desirable for patients so afflicted.

After a careful study of climatic conditions in those regions known to be most beneficial to arthritic and rheumatic sufferers, he found that a relative humidity of between 25 and 35% was most suitable.

Later, as his studies continued, Dr. Young realized the importance of controlling the same factors in the case of people suffering from many other diseases, and thereupon decided that the entire hospital should be air conditioned, rather than only a few rooms. It was decided also that temperature and humidity control be made separate for each room, to suit the ideas of comfort for the patient occupying that room at any given time.

CHANGE CONDITIONS FOR EACH PATIENT

Therefore, it is possible with this installation to supply the most suitable climatic conditions for each individual patient, something never before attempted in air conditioning of hospitals, and to reproduce the beneficial effects of any climate without dust or high humidity.

In winter, temperature and humidity can be kept at such levels as have appeared advantageous for arthritic and rheumatic patients in climates like those of Florida and Arizona. In summer, regardless of outside temperature, the temperature inside the hospital will not go above 80° F., while relative humidity will not exceed 30%.

According to the engineers, it was necessary to meet two important requirements in designing this system. No general recirculation of air could be allowed, and, as the hospital is primarily devoted to arthritis and rheumatic fever cases, low relative humidities for summer operation are required. From the standpoint of first and operating costs, it was decided that a combination of liquid absorption, mechanical refrigeration and local recirculation would be the most efficient. Local recirculation, therefore, is confined to each room by means of an exhaust in each room, which prevents dissemination of odors and contamination from airborne germs.

HOW LITHIUM CHLORIDE IS USED

The system consists of a central unit, air being drawn from outside from a bricked-in shaft through a dry filter, over heating coils in winter, and through a lithium chloride solution at all seasons.

In winter, the solution, being absorptive of water, becomes diluted and helps to humidify the warmed air. In summer the solution is concentrated and effects removal of moisture from the air. Steam injected from the main heating plant also supplies humidity when needed.

The lithium chloride contactor is a large steel tank holding a perforated steel plate from which depend a vast number of strings, the lithium chloride dropping through the perforations and dripping down the strings to form a huge blanket through which the air passes to the intake of the fan chamber and flows over a cooling coil.

FREON AND CHILLED-WATER SYSTEM

A 25-hp. 8-cylinder twin V-type Freon-12 compressor is used for sensible cooling. There is no direct expansion, chilled water being used for secondary cooling. Fin type coolers are supplied with refrigerated water from a storage tank which is provided with automatic controls arranged to regulate the temperatures through the coolers, as determined by thermostatic controls for three different zones.

Passing through a blender unit, the highly cooled and dehumidified or properly warmed and humidified air (according to the season) is then passed by means of built-in ducts through ejector type local recirculating units, one being provided for each room. In these recirculating units, which are placed under the window, local air is mixed with the conditioned air before being distributed to the room. These local units have fin-type heaters which operate on the thermostatic control of each room, and each has a gravity exhaust, except for the operating rooms where fan exhausts are used.

A gas-fired boiler in the sub-basement—separate from the building's steam plant—is used for boiling out the moisture from the diluted lithium chloride which thus is re-concentrated and returned to the tank.

Vapor rising from the heat solution passes through an economizer which further concentrates any remaining lithium chloride, the water vapor which remains being condensed and passed off as waste. Chilled water in a steel shell, flowing around coils, cools the lithium chloride before it is returned to the gas boiler for re-concentrating.

St. Louis Conditioning Firm Building New Storeroom

ST. LOUIS—A new shop and storeroom building having 15,600 sq. ft. of space is being constructed here by Droste & Rockel Sheet Metal Co., it is reported. Plans for five additional employes by May 15 will increase the company's staff to 15. L. W. Droste and V. R. Rockel are owners of the firm.

Marley Co. Leases Additional Manufacturing Space

KANSAS CITY, Mo.—Marley Co., manufacturer of cooling towers and air-conditioning equipment, has leased a one-story, 100 x 125-ft. building here. The addition will increase the company's manufacturing facilities 50%.

Removal of Canadian Sheet Metal Tariff Sought

TORONTO, Ont., Canada—Temporary removal of the 20% tariff on sheet metal imported from the United States and the 12½% tariff on British sheet metal is being sought by Canadian building groups. Removal of the tariffs would materially aid air-conditioning installations and other building activity throughout the dominion, the builders claim.

Canadian mills have informed contractors that they would be unable to fill sheet metal orders before July.

Band Manages Carney-Young Airtemp Distributorship

BOSTON—E. H. Band, formerly Boston factory-branch manager of the air-conditioning division of Gar Wood Industries, Inc., has been appointed manager of Carney-Young Utilities Corp., Chrysler Airtemp distributor.

Officers of the recently organized Carney-Young firm are W. Stewart Young, president; Robert W. Carney, treasurer; George Bolton, fuel oil installation, and maintenance manager; and L. B. Jones, engineering head.

Carrier to Air Condition Washington's Apex Bldg.

WASHINGTON, D. C.—Apex Building, more commonly known as U.S. Government Trade Relations Bldg., will be air conditioned sometime this year by a Carrier system including three Carrier centrifugal refrigerating machines with a capacity of 650 tons of refrigeration. Contracts for the job were signed recently.

Seattle Chain Air Conditions Its Oldest Women's Shop

SEATTLE—A $10,000 air-conditioning system was installed as part of the $50,000 spent in remodeling Zukor's oldest store in a chain of 15 women's-wear establishments.

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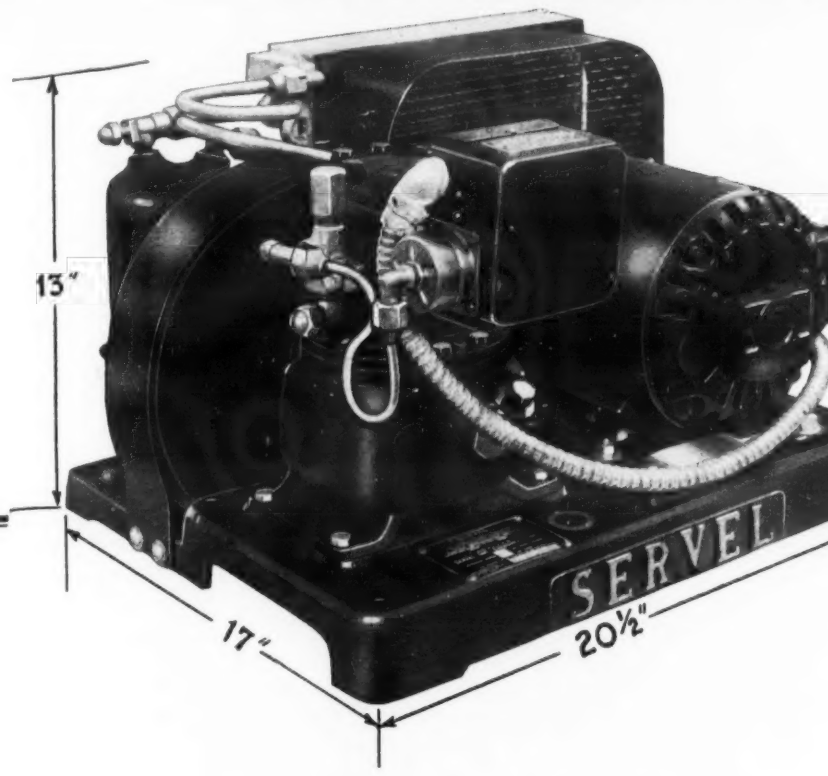

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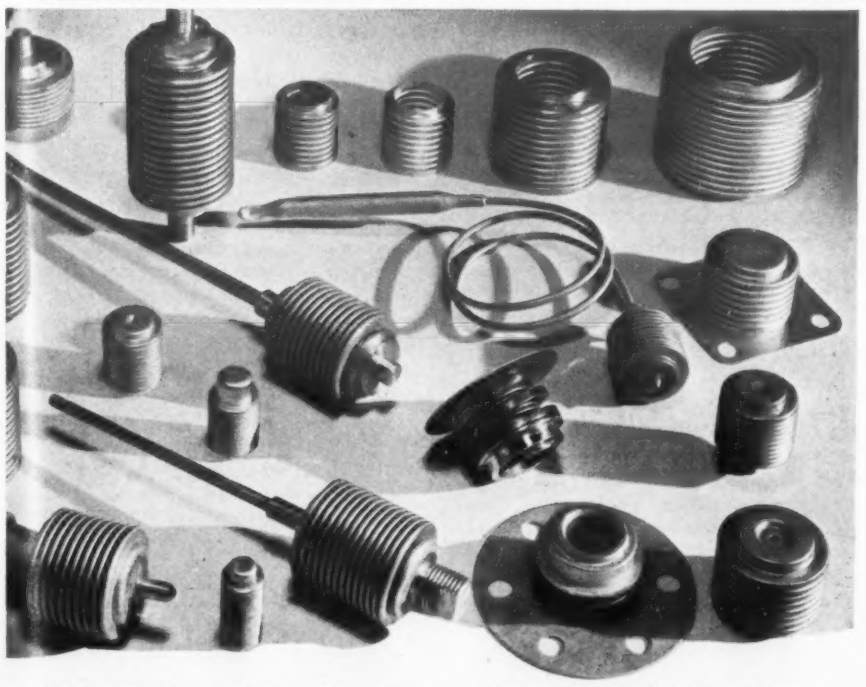

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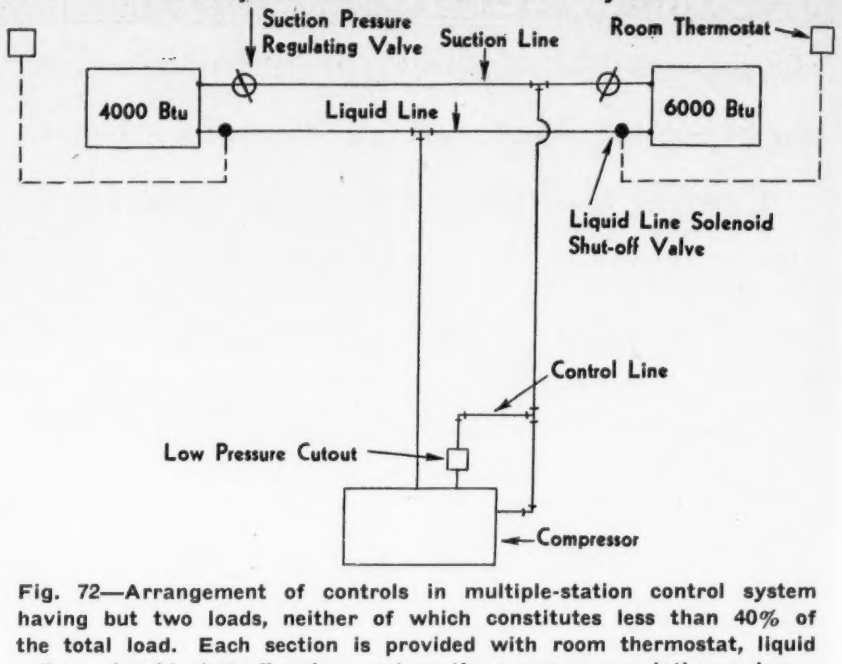

Fig. 72—Arrangement of controls in multiple-station control system having but two loads, neither of which constitutes less than 40% of the total load. Each section is provided with room thermostat, liquid line solenoid shut-off valve, and suction-pressure regulating valve.

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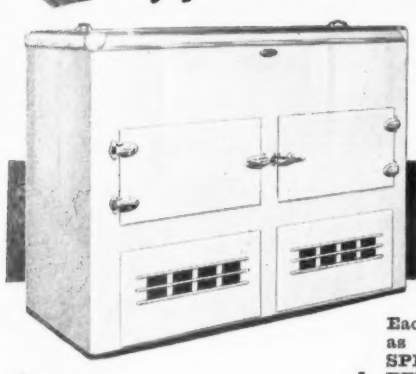

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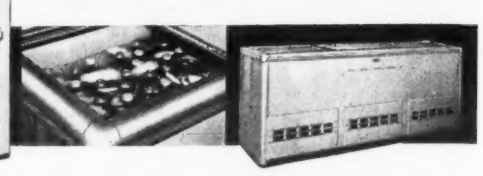

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— AIR CONDITIONING MADE EASY —

Common Arrangements of Controls For Air-Conditioning Systems

SECTION NO. 14 (Cont.)

CONTROLS & ZONING

BY F. O. JORDAN

Arrangement of Controls

Under this heading, common arrangements of controls will be discussed.

General practice in summer comfort control is to permit continuous operation of the air-circulating equipment, and operate the refrigerating or air-cooling equipment intermittently as necessary to maintain the desired temperature level.

Reason for this practice is that since a portion of the cooling effect of the equipment depends upon the convection currents resulting from air circulation, a more even comfort effect may be maintained during the off-cycle period of the refrigerating equipment if air circulation is maintained.

Furthermore, constant circulation prevents stagnation and stratification of air, and results in more even constant temperature distribution. Therefore the majority of control arrangements result in intermittent operation of the actual air-cooling equipment, but permit constant operation of the air-circulating apparatus.

One of the most important factors in obtaining satisfactory control is the proper location of the thermostat. The thermostat should be so located that it reacts to the average temperature of the room, and is not influenced by air streams direct from an air supply or by outside wall temperatures, etc. A very good location for the thermostat is in or near an air vent from the room.

Control systems may be divided into two general classifications, "Single Station" and "Multiple Station" installations.

In the single station installation, control is accomplished from one point. There may be but one air-conditioning unit, or there may be several air-conditioning units, but in either case the equipment starts and stops together so that it functions as one unit insofar as controls are concerned.

If there are several air-conditioning units, they may all be in one room, or they may be located in several rooms, although in the latter case there is greater danger of difficulty in obtaining satisfactory regulation.

In the single station which controls the air-conditioning units for several rooms, it is important that the control station be located in the room having the longest load period.

It is not necessary for the control room to have the heaviest load because the loads in all rooms will be balanced by air-conditioning units of comparable capacity so that the effect upon the room's temperature of its load will be the same in all cases. Therefore, it is the *length* of the load period, rather than its *intensity,* which should govern the location of the control station.

For the single station control used with direct expansion equipment, the most common arrangement is to use a room thermostat which operates a solenoid valve located in the liquid refrigerant supply line to the direct expansion coil or coils to shut off the refrigerant supply when the room temperature falls below the setting of the thermostat.

A low-pressure control is provided at the compressor for shutting off the current supply to the compressor as soon as the continued pumping action of the compressor has pulled the suction pressure down below a predetermined level, after the closing of the liquid refrigerant solenoid shut-off valve.

Advantage of this arrangement is that all refrigerant is withdrawn from the low-pressure system before the compressor goes out of action, with the result that excessive pressures cannot be built up in the low-pressure system during the off-cycle or lay-over period due to evaporation of refrigerant in the "lowside" while the compressor is out of operation. The diagram shown in Fig. 1, Section 6, shows this control arrangement.

A less complicated arrangement is to allow the room thermostat itself to break the electric circuit to the compressor, thus eliminating the solenoid valve and the low-pressure control. However, the fact that this method allows the low-pressure system to remain full of refrigerant during lay-over periods is a distinct disadvantage.

For the single station control used with chilled-water equipment, the usual arrangement is to connect the room thermostat to stop the chilled-water circulating pump when the room temperature falls below a predetermined level. A liquid thermostat is located in the water cooler for closing a solenoid shut-off valve in the liquid-refrigerant supply line to the water-cooling coil when the water temperature falls below a predetermined level.

A low-pressure control is provided for shutting off the electric current from the compressor as soon as its pumping action has pumped the suction pressure down to a predetermined level.

With this arrangement, a fall in room temperature causes the thermostat to stop the circulating pump. The resultant rapid drop in water-cooler temperature causes the water thermostat to close the liquid-refrigerant supply to the cooler. The resultant rapid pump-down of suction pressure causes the low-pressure control to stop the compressor. The diagram shown in Fig. 2, Section 6, shows the above arrangement.

"Inherent control" of humidity may be obtained with either the direct-expansion or the chilled-water system by selecting the equipment as described above, while the room thermostat may be replaced with the effective temperature control consisting of the humidistatically controlled thermostat, which has been described.

The by-pass method of humidity control may be added to either the direct expansion or the chilled-water "single station" control system merely by providing the proper air by-pass dampers or refrigerant by-pass valves, together with the humidistat or thermostat for operating the by-pass.

With the thermostatically controlled by-pass, the by-pass control thermostat is set to open the by-pass as the room-temperature level falls until a predetermined level is reached at which the temperature-control thermostat stops the equipment as described above. With the humidistatically controlled by-pass, the humidistat opens the by-pass as the room-humidity level rises. Its action is independent of the action of the room thermostat.

If the by-pass system of control is used with the single station control system in which more than one air-conditioning unit is used, it is necessary that all of the air-conditioning units in the system be provided with by-pass dampers or valves, and that all by-passes function together.

If this is not done, the load decrease upon the condensing unit due to the opening of one by-pass will be insufficient to produce a sufficient drop in refrigerant temperature to make effective the control of humidity, for it must be remembered that the fall in refrigerant temperature depends upon the percentage of reduction in the *entire load* upon the *condensing unit,* and not upon the reduction in load upon the air-conditioning unit.

Thus far, the discussion of control arrangements has been restricted to single station control systems. In the arrangement of the multiple station control systems, several additional factors are involved.

In the multiple station controlled direct expansion system, a room thermostat is located at each station and wired so that it controls a solenoid shut-off valve in the liquid refrigerant supply line to the air-conditioning unit or units which it controls.

With systems of this type, a suction pressure regulating valve must be provided in the suction line from each air-conditioning coil in order to prevent a fall in suction pressure and refrigerant temperature in the coil (and resultant change in coil-performance characteristics) due to the reduction in load upon the condensing unit when some other coil is cut out of service by its room thermostat.

Unless some automatic means is provided for reducing the compressor capacity, the system must be arranged so that the entire system is thrown out of operation if more than 60% of the air-conditioning unit load is removed from the condensing unit due to stoppage by room thermostats, in order to prevent the suction pressure at the compressor from being reduced below the level of good compressor operation.

However, if some automatic capac-

(Continued on Page 19, Column 1)

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Purpose and Operation of Miscellaneous Air-Conditioning Controls

(*Continued from Page 18, Column 5*)

ity-reducing feature is provided for the compressor which reduces compressor capacity (by reducing the compressor speed, or by cutting in clearance pockets or by by-passing a portion of the high-pressure gas to the compressor suction line) upon slight reductions in suction pressure caused by load reductions, the suction pressure may be held practically constant throughout the entire system. Thus, individual suction pressure regulating valves at the air-conditioning units may be omitted, and no trouble will result due to the load reduction when air-conditioning units are cut out of service.

The general arrangement when the usual constant capacity compressor is used, is to divide the entire system into no more than two portions, neither of which constitutes less than 40% of the entire air-conditioning unit load.

Each section is provided with its room thermostat, liquid line shut-off solenoid valve, and suction pressure regulating valve as described above. In this way, not more than 60% of the load can be removed, except when all the air-conditioning units are thrown out of service, in which event the low-pressure control would stop the compressor as described above for the single station control arrangement. Fig. 72 shows a typical arrangement.

If the various units are properly selected for inherent humidity control, control over room humidity may be obtained with the direct expansion system under multiple station thermostatic control.

This constitutes a very important advantage of inherent humidity control as the by-pass humidity control method will *not function with this type of system.* This is true because the features which must be used as described above for preventing suction pressure changes in one section of the air-conditioning units when another section is not out of service due to room thermostatic control, obviously will spoil the effect of by-pass control, as they will not permit the reduction in coil-refrigerant temperature when the by-pass is opened, which is necessary for making effective the by-pass method of humidity control.

The by-pass method of humidity control, when used with the direct expansion system, is *effective only with single station temperature control.* Thus, only one system and one condensing unit may be used per control station with the by-pass method, so that if by-pass humidty control is desired with the direct expansion system, the entire installation must be divided into the same number of entirely separate and independent systems as the number of control stations used.

When multiple station control is used with the chilled-water system, the usual arrangement is to allow the room thermostat to cut off the water-flow from the air-conditioning coil which it controls by closing a solenoid valve in the chilled-water supply connection, or by opening a solenoid valve in a water by-pass around the coil.

By-pass humidity control (not particularly effective with any chilled-water coil) may be used as described above for the single station control system. The water cooler which supplies chilled water to the system is provided with a thermostat which shuts off the supply of liquid refrigerant to the cooler when the water temperature falls to a predetermined level, while the compressor shuts off on low-suction pressure as described above.

Although the general practice as noted above is to allow constant-circulating fan operation during the cooling season; an arrangement may be encountered in which the room thermostat controls fan operation. This arrangement may be used without difficulty with the chilled-water system in connection with the type of water cooler and compressor controls described above.

However, difficulties are encountered when the thermostatically controlled fan is used in connection with the direct expansion system unless the refrigerant supply is cut off at the same time that the fan is stopped.

Otherwise the removal of the load resulting from shutting off the fan results in a drop in suction pressure, which cannot be used to stop the compressor on low-pressure control, because the refrigerant remaining in the air-conditioning coil at room temperature, even without fan operation, would result in continual "short cycling" of the compressor by continuing to evaporate in the "low side" after the compressor had been stopped by the low-pressure control, and so starting the compressor after a very brief period by increasing the suction pressure above the setting of low-pressure control.

In addition to the comfort controls discussed above, various safety and operation controls are necessary. They are as follows:

Condensing Water or 'Head Pressure' Control

Purpose of this control is to so regulate the condensing water flow that the head pressure is held practically constant. It consists of a diaphragm-operated throttling valve located in the condensing water supply line, and actuated by the head pressure or condenser gas pressure so that a slight rise in head pressure allows an increase in the condensing water-flow rate.

The control is provided with a manual adjustment whereby the valve may be set so that it will maintain any desired head pressure within the range of the equipment.

With this control, a rise in inlet condensing water temperature will cause a slight rise in head pressure, which, in turn, will open the valve and so increase the condensing water-flow rate enough to prevent a further rise in head pressure. A good control should hold the head pressure within 2 lbs. of the setting, provided that sufficient water is available at the proper temperature.

High Pressure Safety Cutout

The purpose of the high pressure safety cutout is to stop the compressor upon rising head pressure before dangerously excessive pressures can develop. The control consists of a diaphragm which is connected by means of a small control tube to the compressor discharge line, so that an increase in head pressure beyond the setting of the control will produce a movement of the diaphragm which is sufficient to break the electric control circuit to the compressor starter and so stop the compressor.

The high pressure safety cutout generally is combined with the low-pressure control into one unit, the low-pressure control element being connected by means of a control tube to the suction line so that it is actuated by the suction pressure, and the high pressure safety cut-out being connected to the compressor discharge so as to be actuated by the compressor discharge pressure. Either the high or low-pressure element may control compressor operation through the compressor starter.

In air-conditioning service the low-pressure element generally is set to cut out at 5 to 10 lbs. suction pressure and cut in at 25 to 35 lbs. suction pressure, while the high pressure element generally is set to cut out at 180 to 200 lbs. head pressure, and cut in at 140 to 160 lbs. head pressure.

As stated above, the low-pressure control is used as an operating control by setting it to stop the compressor when the suction pressure has been reduced due to the refrigerant having been shut off from the direct expansion coil by room thermostat or other controls. However, the high-pressure control should not be used as an operating control, but should be employed only as a safety feature.

Safety Thermostat

A thermostat should be located within the water cooler which is used for cooling water for the chilled-water system, for the purpose of shutting off the refrigerant supply to prevent freezing of the water in the cooler due to possible failure of the controls.

A thermostat should be used for stopping ice formation before there is danger of bursting the tank in an installation where refrigerating effect is stored during off-peak periods by freezing of ice.

This may be accomplished by locating the sensitive bulb of the thermostat about two inches from the inside of the shell of the storage tank, as the increased rate of heat transmission from the bulb as soon as the ice formation touches it will contract the charge within the bulb and so cause the thermostat to function to shut off the refrigerant.

The type of thermostat which is used for controlling water temperature consists of a sensitive metallic bulb, a flexible extended tube, and a metallic bellows, all forming one compartment which is filled with a liquid, and a snap-action switch.

Contraction of liquid within the sensitive bulb due to a drop in bulb temperature produces a movement of the bellows which operates the switch to make or break the electric circuit to the solenoid valve (or motor starter) which is to be controlled.

Similar thermostats or temperature controllers are used also as an operating control for regulating the operating temperature of the chilled water for the chilled-water system as described above.

The expansion valve is the dividing point between the "high side" and the "low side" at the refrigerant entrance to the direct expansion coil. Its purpose is to feed refrigerant to the coil or evaporator at the exact rate necessary to keep the coil full of refrigerant at all times without permitting refrigerant to overflow from the evaporator and so return to the compressor.

In other words, the expansion valve must meter or measure out refrigerant to the coil at the maximum rate that the coil can evaporate refrigerant. The satisfactory performance of the entire system depends upon the expansion valve, because the capacity of the coil is reduced if insufficient refrigerant is delivered to the coil, while the compressor will suffer if refrigerant is passed in such quantities that liquid refrigerant is permitted to return to the compressor.

In cases where there is no load variation (such cases are non-existant in air-conditioning practice), the required refrigerant flow is constant, so that the expansion valve may be a fixed orifice or proper-sized opening.

In cases where a slight variation in load occurs, the "automatic" expansion valve may be used. The automatic expansion valve is a pressure-actuated valve which may be adjusted to maintain a given evaporator refrigerant pressure.

When the load upon the coil is increased, more refrigerant is evaporated so that the evaporator pressure increases slightly. This increase in pressure is held within narrow limits by the automatic expansion valve, because it closes partially upon an increase in evaporator pressure.

If there is a considerable load increase, there is a considerable reduction in refrigerant supply to the coil at the very time it is needed to carry the increased load. Although the evaporator *pressure* is held practically constant, the evaporator *temperature* is allowed to rise because insufficient refrigerant is supplied to prevent

(*Concluded on Page 20, Column 3*)

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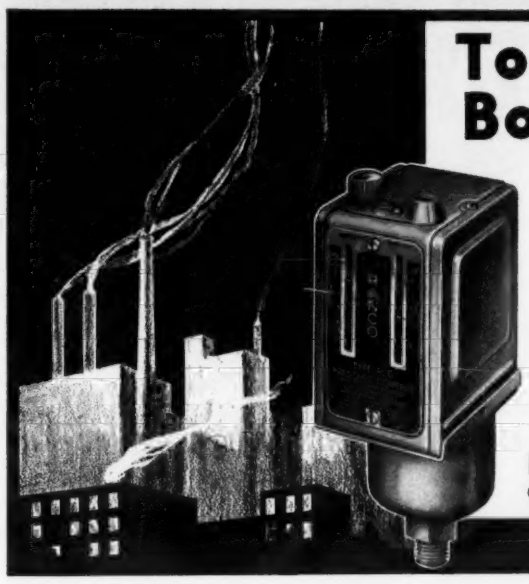

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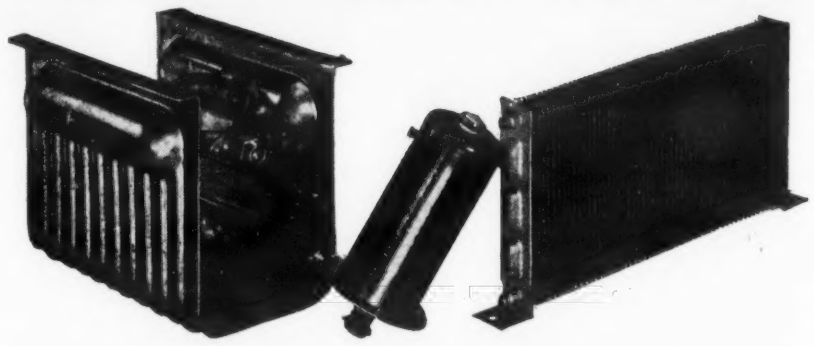

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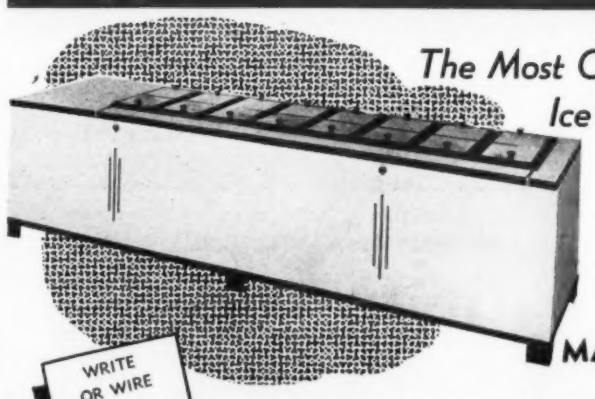

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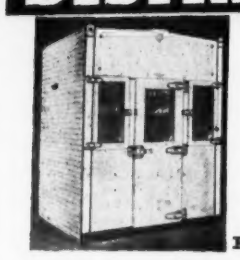

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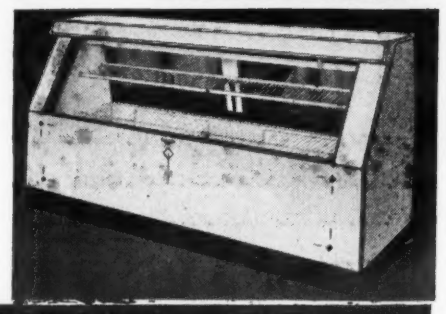

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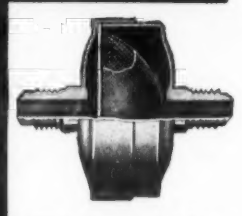

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Expansion Valve Use In Air Conditioning

(*Concluded from Page 19, Column 3*)

large quantities of super-heated gas from forming within the evaporator.

Reductions in evaporator pressure resulting from load reductions actuate the automatic expansion valve to open wider so that more refrigerant is supplied to the evaporator than it can evaporate, with the result that liquid refrigerant floods back to the compressor. Obviously such an expansion valve is unsatisfactory for the air-conditioning unit as the air-conditioning load is far from constant.

A more satisfactory type of expansion valve for air-conditioning service is the "thermostatic" expansion valve.

The thermostatic expansion valve consists of a valve body and a metallic sensitive bulb, an extended flexible tube, and a bellows, which are connected together and are filled with a liquid or gas. The valve body is installed in the liquid refrigerant supply line to the evaporator or air-conditioning coil, while the sensitive bulb is strapped in intimate contact with the suction line near the evaporator.

When liquid refrigerant passes through the coil and reaches the suction line, the rate of heat transmission between the inside of the wall of the suction tubing and the refrigerant is increased so that the temperature of the sensitive bulb is lowered, and the charge within the bulb is contracted.

This action is passed along to the bellows with the result that it contracts and partially closes off the valve until the rate of refrigerant supply is somewhat less than the capacity of the evaporator to evaporate refrigerant. Soon super-heated gaseous refrigerant passes from the evaporator into the suction line, and reaches the sensitive bulb. The rate of the heat transfer from the inside of the suction-tube wall to the super-heated gas is reduced so that the adjacent sensitive bulb becomes warmer, and its charge is expanded.

This action is transferred to the bellows, and the valve is opened until the refrigerant feed is faster than the rate of evaporation within the evaporator. Eventually, liquid refrigerant passes from the evaporator coil into the suction line and the valve begins to close again.

In this way, the valve floats along upon the load, now allowing a slight quantity of liquid refrigerant to overflow from the evaporator into the suction line but not enough to flood back to the compressor, and now allowing a few degrees of super-heat but not enough to affect the evaporator coil capacity appreciably.

The important feature about the thermostatic expansion valve is that it proportions the refrigerant feed as required by the load, remaining in the open position longer during heavier loads because super-heat forms more quickly, and remaining closed longer during light loads because super-heat forms slowly.

The thermostatic expansion valve does not regulate evaporator *pressure,* but allows it to depend upon the balance between the compressor and the load which is to be desired. Neither does it regulate the evaporator temperature, because the evaporator coil is maintained in a practically saturated condition, so that its refrigerant temperature is the saturation temperature corresponding to its refrigerant pressure. For this reason, the thermostatic expansion valve coordinates properly with the by-pass method of humidity control, and with other controls.

In order to obtain the proper results, the thermostatic expansion valve must be properly adjusted. The alternate appearance of super-heat and liquid refrigerant in the suction line results in a temperature cycle, or "swing" in the suction line.

For the proper valve setting and for the average coil this swing should be about 18°, the lower end of the swing being at the saturation temperature corresponding to the suction pressure at that point (this pressure does not vary with the temperature, but remains practically constant, as the temperature variation is due to the varying degree of super-heat only), and the upper end of the swing being about 18° above the saturation temperature.

Although the proper swing varies somewhat with the job conditions, generally a swing less than 18° means a setting which is too rich so that liquid refrigerant is flooding back to the compressor while a swing of greater than 18° is an unnecessary penalty upon the coil.

To set an expansion valve, it should be deliberately set too lean, and the adjustment should be gradually opened and the swing reduced until the proper setting has been reached. If the compressor crankcase begins to feel cold to the touch, the valve setting is too rich.

High Side Float

The high side float sometimes is used as an expansion valve. This accessory consists of a float valve and chamber, and is located between the condenser and the evaporator.

When the liquid refrigerant level in the float chamber is raised by the flow of refrigerant from the receiver, the valve opens, allowing the expansion of refrigerant into the evaporator. When the load upon the evaporator coil is increased, more refrigerant is evaporated, so that soon there is more refrigerant to be condensed in the condenser. This in turn, increases the refrigerant flow to the high side float, so that the level in the float chamber is raised, opening the valve wider, and allowing a more rapid flow to the evaporator. Thus the setting of the valve automatically adjusts itself to the load.

When the high side float is used, the refrigerant charge in the system is very critical. If a very slight excess of refrigerant is introduced into the system, liquid refrigerant will flood back to the compressor, while a slight shortage will result in considerable super-heat and a great reduction in evaporator capacity.

An "accumulator" or small reservoir in the suction line at the return end of the coil is a partial remedy, since a small surplus of refrigerant introduced into the system will lie in the accumulator.

However, in order to prevent oil from being trapped in the accumulator it must be small enough to allow some velocity and agitation, which very seriously affects its effectiveness as an accumulator.

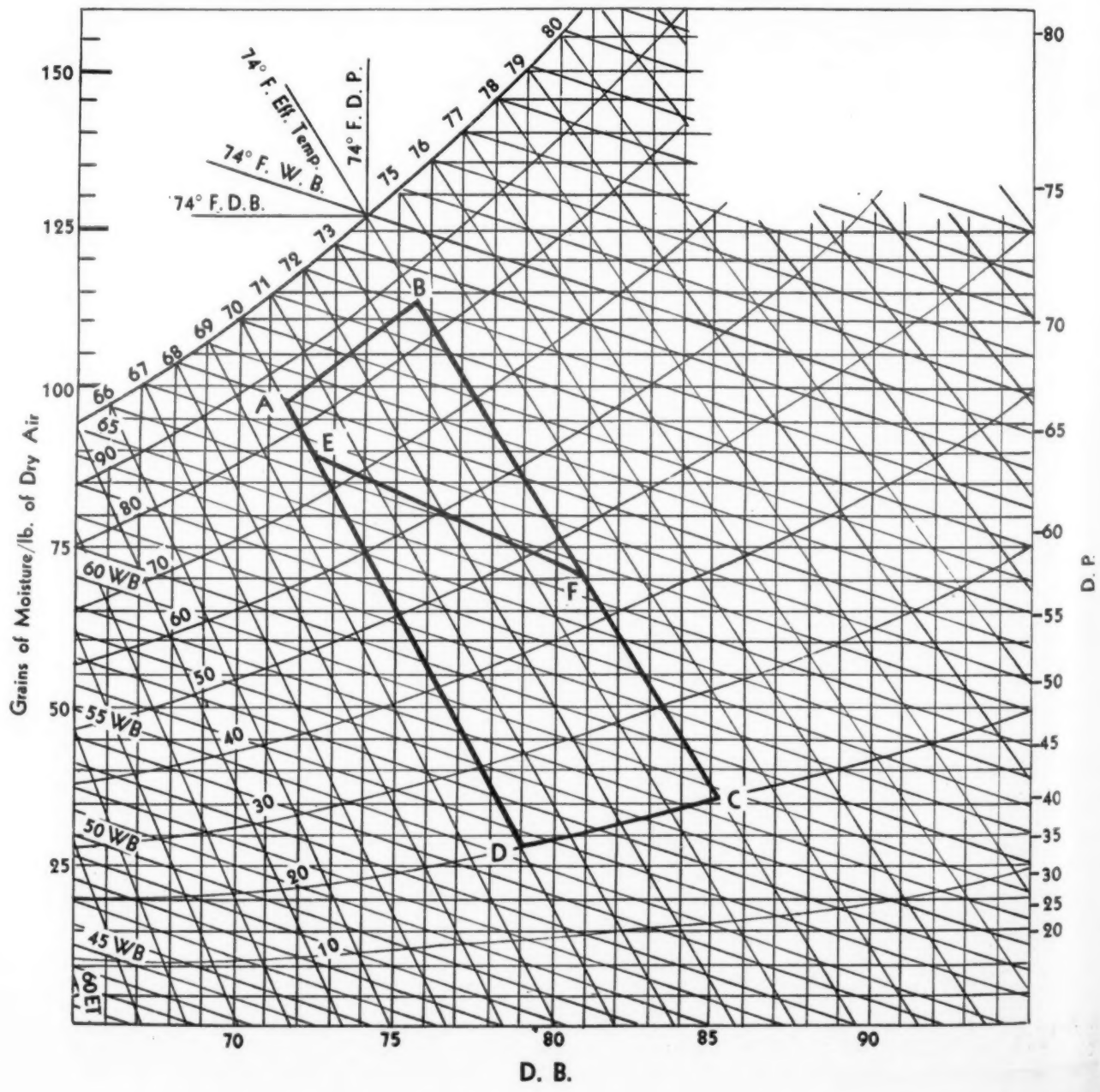
Obviously, the floating element must be of the closed and sealed type, rather than of the open "bucket" type as used in many steam traps, because the fact that refrigerants tend to evaporate at working conditions rather than condense, would prevent the bucket from filling and sinking as required to allow the bucket type of trap to discharge.

Comfort Zone

The zone formed by the parallelogram "ABCD" in Fig. 70 has been shown to constitute a zone in which the average person is comfortable. Hence, equipment for maintenance of comfort which can hold the room conditions within this area should be considered satisfactory.

Line "EF"—suggested performance line for summer air-conditioning equipment. As the conditions on this line are all within the comfort zone and do not extend either to low humidity, difficult or impracticable to obtain, nor to high humidity, which might have undesirable effect on room interior or furnishings, equipment may be designed with sufficient inherent humidity control which, when operated under the control of a thermo-humidistat, will maintain room conditions upon this line.

Fig. 70—Psychrometric Chart for Determining Effective Temperatures



3 District Merchandise Heads Named by N. H. Utility

MANCHESTER, N. H.—Three new district merchandise managers have been appointed by Public Service Company of New Hampshire, Avery R. Schiller, vice president, has announced.

Edwin Cedarholm will manage the Franklin and Tilton districts; Marcus Bourn, the Dover division of Twin State Gas & Electric Co., and R. Emery Smith, the Berlin and Lancaster divisions of the Twin State Company and the northern division of Public Service Co.

Mr. Cedarholm has been with the Public Service organization since 1926, Mr. Bourn is one of its leading salesmen, and Mr. Smith has been merchandising manager of the Franklin and Tilton districts since 1933.

Mark Rowe Appointed Permutit Domestic Sales Manager

NEW YORK CITY—Mark D. Rowe, veteran of refrigeration and plumbing sales management, has been appointed to succeed Oliver P. Harris as domestic sales manager for The Permutit Co., manufacturer of water-conditioning equipment, the company announces.

Mr. Harris, Permutit's domestic sales manager for the past six years, resigned to become assistant general manager, insulation division, Standard Lime & Stone Co. Mr. Harris will direct sales of "Capitol" rock wool home insulation. Before joining the Permutit organization, he had been with American Oil Burner Association and Petroleum Heat & Power Co.

Bush Furniture Opens Branch Store at Point Marion

POINT MARION, Pa.—Bush Furniture Co. of Masontown has opened a branch store in the Delvin Bldg. here, handling Kelvinator refrigerators and other household appliances. Sidney Gordon is manager.

— PATENTS —

Issued March 23, 1937

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2,074,370. AIR CONDITIONING AND VENTILATION OF HOUSES. William C. Coulton, Medford, Mass., assignor, by mesne assignments, of one-eighth to Albert A. Stearns, Brooklyn, N. Y., and Benjamin Lichterman, New York, N. Y. Application April 16, 1935. Serial No. 16,727. 5 Claims. (Cl. 98—31)

2,074,375. REFRIGERATING APPARATUS. Herman J. Dick, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corp. Application March 23, 1932. Serial No. 600,799. Renewed May 18, 1934. 18 Claims. (Cl. 62—89.5)

2,074,402. REFRIGERATION. James R. Killen, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corp. Application Jan. 14, 1933. Serial No. 651,770. 4 Claims. (Cl. 62—4)

2,074,435. REFRIGERATING APPARATUS. Edmund F. Schweller, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio. Original application Nov. 26, 1932. Serial No. 644,473. Divided and this application Sept. 25, 1935. Serial No. 42,084. 10 Claims. (Cl. 20—35)

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2,074,480. THERMOCOMPRESSOR. John A. MacLean, Hampton, N. J., assignor to Ingersoll-Rand Co., Jersey City, N. J. Application March 18, 1936. Serial No. 69,425. 3 Claims. (Cl. 230—95)

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DESIGNS

103,701. DESIGN FOR A REFRIGERATOR. Harold L. Towle, Pittsburgh, Pa., assignor to Pittsburgh Plate Glass Co. Application Aug. 13, 1936. Serial No. 64,387. Term of patent 14 years.

PATENTS

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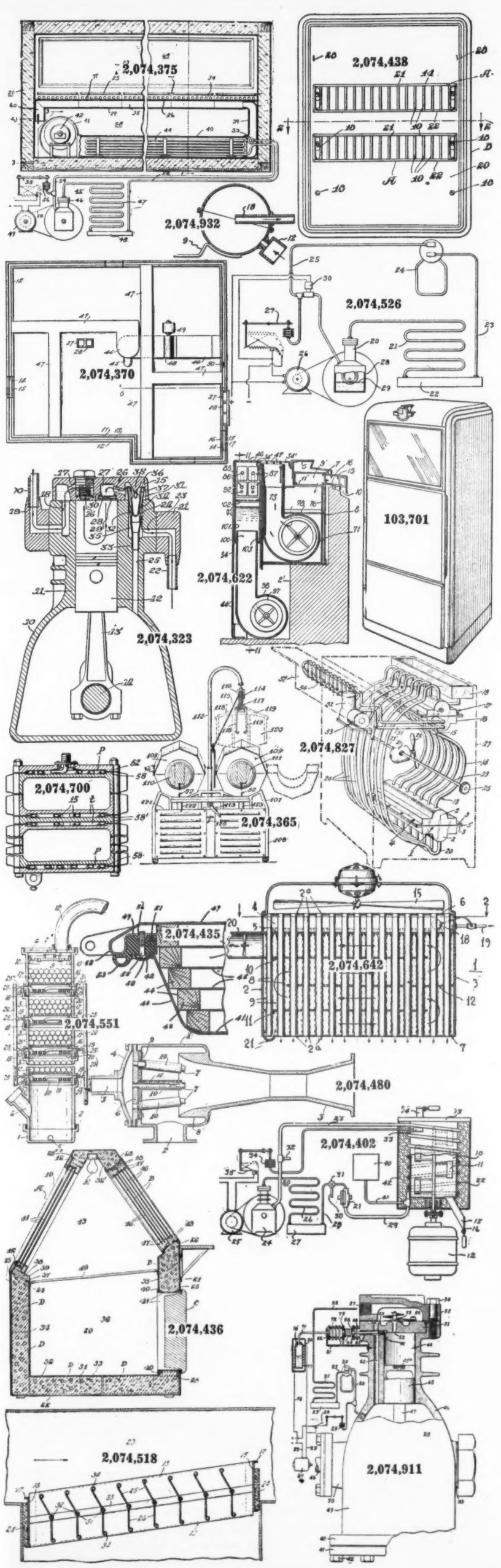

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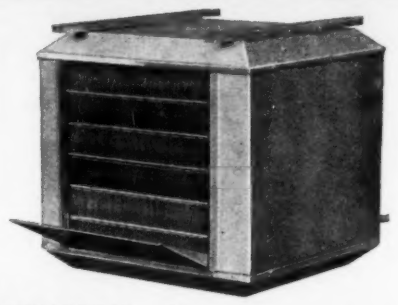

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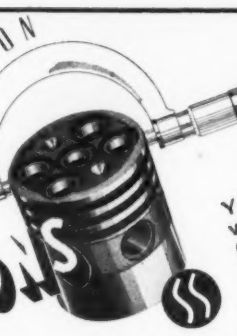

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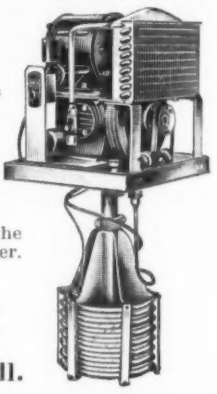

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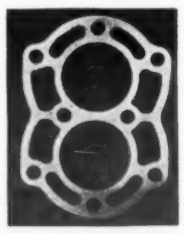

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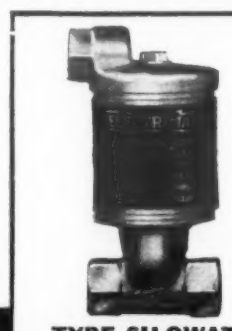

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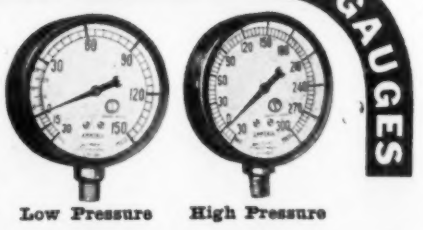

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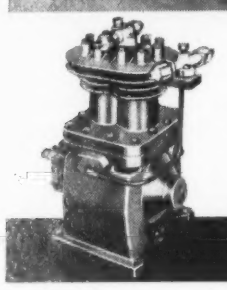

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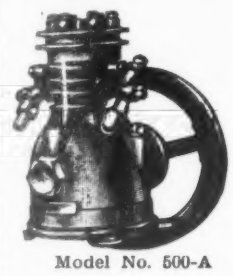

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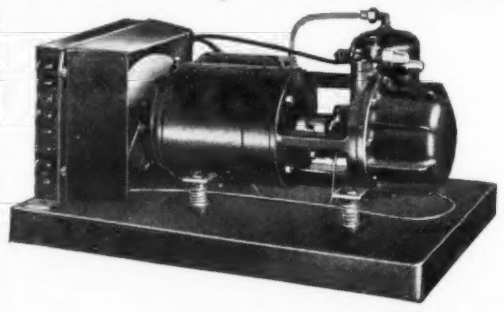

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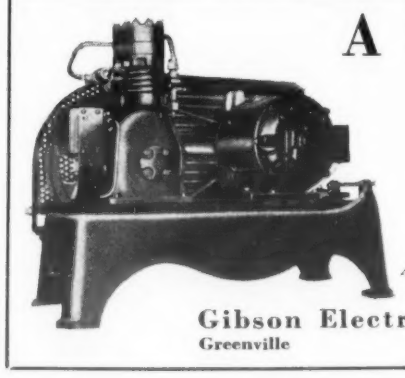

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When to Adjust Thermostatic Expansion Valves & How to Service Them

CHAPTER 7—Evaporators & Refrigerant Controls (Cont.)

BY K. M. NEWCUM

Much has been said about super-heat. Super-heat may best be explained as follows:

Liquid refrigerant is that refrigerant which either by pressure or temperature or a combination of both is held intact in its liquid state.

Saturated vapor is that vapor which is in close proximity to liquid refrigerant and is of the same temperature as the liquid.

Refrigerant vapor is that heat-laden gas which, having absorbed heat units, has changed its state to a vapor but is still at the same temperature as the liquid and saturated vapor.

Super-heated vapor is that refrigerant vapor which, having left the colder area of the liquid saturated vapor and refrigerant vapor and having traveled down near the end of the evaporator, has become heated to a point higher than the temperature of the other refrigerant by the higher temperature of the evaporator or suction line near the point where the thermo bulb is installed.

The difference in temperature or the rise in temperature of this vapor above that of the remaining refrigerant is known as the amount or degree of super-heat.

The degree of super-heat plays a most important part in the correct function of the thermostatic expansion valve.

Super-heat can be measured by the difference in temperature between the inlet of the evaporator and the point where the bulb is located.

Reference has been made to keeping the super-heat at the lowest possible degree, or saying in another way, keeping the temperature of the inlet and outlet of the evaporator as near the same as possible.

Assume that on a typical commercial installation a thermometer were placed in the inlet of the evaporator and another in the evaporator or suction line near the thermo bulb or at the end of the evaporator.

For example, assume during the on-cycle there was a temperature difference of 40° F. This would be conclusive proof that a very large part of the evaporator is being starved of liquid and saturated vapor and the system is operating on a low suction temperature and pressure. Inefficiency would thus be indicated.

Now assume that the expansion valve were adjusted (opened) allowing more refrigerant to enter, raising the suction pressure. With this increase in suction pressure and temperature, the degree of super-heat would be lowered as the frost line would extend further through the evaporator and nearer to the thermostatic bulb.

All of this would materially increase the efficiency of the system.

In an article explaining the operation of the thermostatic valve, by D. D. Wile, chief refrigeration and air-conditioning engineer of Detroit Lubricator Co., which appeared in the June 17, 1936, issue of REFRIGERATION NEWS, there was an accompanying diagram of a simple Freon system. It is shown in Fig. 164.

Note in this diagram the three thermometers. One is near the inlet, another near the end of the coil, and the last one near the thermo bulb.

The first two thermometers register 15° F., proving the point that the refrigerant temperature is the same in all parts of the coil so long as there is liquid or saturated vapor present, but beyond that point the temperature increases. This increase in temperature is the super-heated gas and the difference in temperature is the degree of super-heat.

In this example, the difference is between 25° F. and 15° F. which equals 10° F. super-heat.

Most all stock or standard thermostatic expansion valves are set at the factory to maintain a 10° F. super-heat, this having been determined to be the most universal and practical super-heat setting for such a wide variety of applications.

Knowing that the valve in Fig. 164 is set at a 10° super-heat, assume for example that this same valve is being used on an ice cream cabinet maintaining a sleeve temperature of 0° F. and a refrigerant temperature of minus 10° F.

This minus 10° F. refrigerant temperature with Freon-12 would represent a suction pressure of 4.5 lbs. pressure. The example in the diagram shows a refrigerant temperature of 15° F. and an evaporator pressure of 18 lbs.

Without changing the adjustment on the valve, it is now being operated with a minus 10° F. evaporator temperature and a 4.5 lbs. pressure.

Exactly the same condition will prevail. That is, the valve will operate to feed liquid into the ice cream coil up to near the end of the evaporator, and the same 10° super-heat setting will operate the valve very satisfactorily.

This proves the point that the thermostatic valve does not have to be readjusted for different temperature applications so long as the super-heat setting is around 10°, and it also illustrates the fact that the function of the valve is actually governed by the degree of super-heat and not by the temperature or pressure of the refrigerant or evaporator.

Note in the diagram (Fig. 164) that a small portion of the end of the evaporator is not being used.

Assume that we desired to extend the actual refrigeration or frost line to the end of the coil to utilize all of the evaporator.

The obvious method would be to open the expansion adjustment to let in more refrigerant. This would frost all of the evaporator, without question, but with 15° F. refrigerant contacting the bulb there would be no temperature difference between the inlet and the bulb, and the valve would operate very sluggishly, allowing a frostback, and the valve would short-cycle frequently.

The correct method to accomplish this result would be to attach a dryer coil or heat exchanger to the end of the evaporator and move the thermo bulb from the coil proper and attach it to the dryer coil or near the heat exchanger, for example, 24 inches from the end of the evaporator.

The result would be; that *without changing the expansion valve adjustment,* the frost line would extend to or beyond the end of the evaporator and the super-heated area would then be beyond the evaporator. The expansion valve would operate perfectly and maintain a constant super-heat without frostbacks, short cycles, or sluggish operation.

All of this is not intended to imply that an expansion valve never needs to be readjusted, but it does suggest that if the valve as received new from the manufacturer is properly installed, it should allow just the correct amount of refrigerant to enter the evaporator to maintain the desired condition.

There are conditions where readjusting the expansion valve is necessary.

One condition would be where it is found that only a small part of the evaporator is frosting and for this reason the temperature of the fixture (refrigerator) is higher than desired.

The refrigerant charge should first be determined by the use of a liquid indicator. If there is a positive seal between the valve and the receiver, the valve adjustment should be turned clockwise not more than one half turn.

There should be a noticeable increase in the suction pressure and the greater inflow of liquid should be heard passing through the valve.

If, after the valve has been opened one half turn or one full turn at the most, it does not change the operating suction pressure and extend the frost line on the evaporator, the trouble is not in the valve adjustment.

It may be due to one or more of several conditions.

The valve may be clogged up, either at the needle or seat, or in the strainer.

There may be moisture in the refrigerant which has frozen at the needle and seat, thus stopping or restricting the valve.

Or the thermo bulb may have lost its charge.

After checking all other conditions, a simple test for a lost charge in the thermo bulb is to remove the bulb from the suction line.

Note the suction pressure on the compound gauge. Then grip the thermo bulb in the hand. The heat from the hand should, by increasing the temperature of the power element, cause the valve to open wide thus materially increasing the suction pressure.

If the pressure does not increase with this test—it is probable that the bulb has lost its charge and should be replaced or a new valve installed.

It is possible also that some internal part of the valve may be stuck or binding. This is very remote but is possible, in which event the valve should be replaced.

It is possible also on certain types of valves that moisture has collected on the inside (atmospheric side) of the body bellows and has frozen. This ice would tend to hold the bellows inoperative. The ice should be removed and glycerine applied in the bellows to prevent further freezing, or the valve should be replaced.

Another condition where adjusting the expansion valve may be desirable is in the case of an unbalanced duplex installation.

Take as an example a case and cooler job with one evaporator in each refrigerator. Assume that with both expansion valves operating on a 10° super-heat and both evaporators completely frosting on each on-cycle,

(Concluded on Page 23, Column 1)

Diagram of Simple Freon System

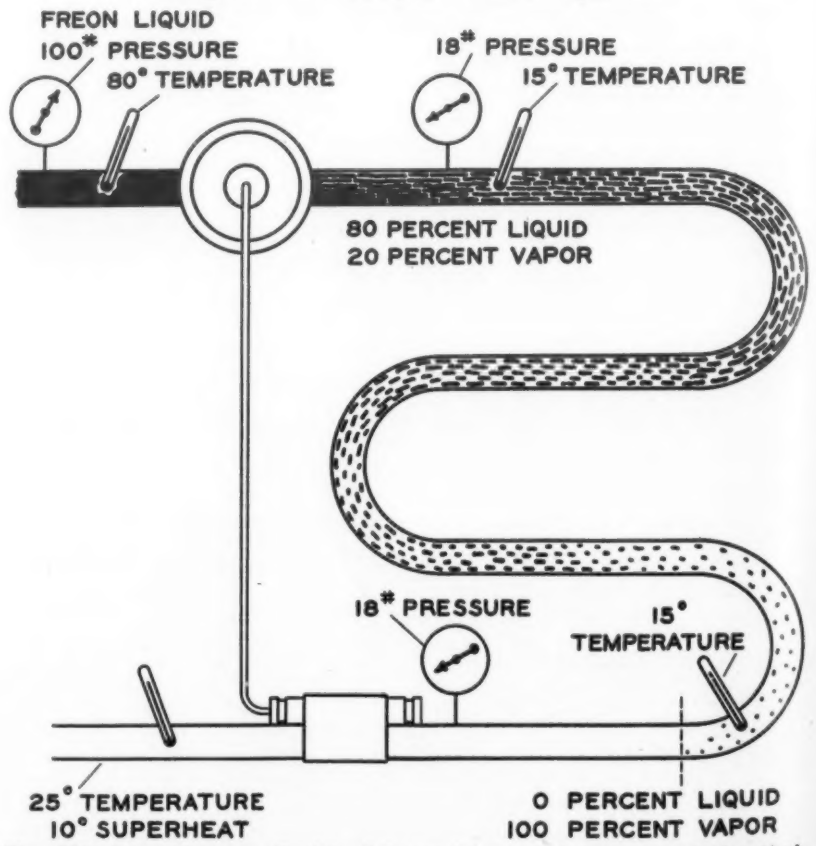


Fig. 164 shows the way liquid refrigerant turns into vapor and also that the temperature of the liquid is the same in any part of the coil until it is vaporized.

Conditions Which May Cause Faulty Operation of Expansion Valve

(*Concluded from Page 22, Column 5*)

the case temperature drops down to 30° while the cooler only pulls down to 38°. The desired temperature in both refrigerators is assumed to be 36°.

This would represent an unbalanced job where the cooler is too small or the case coil is too large. If it is not practicable to install a larger cooler coil to balance the job, the expansion valve on the case coil may be adjusted to maintain a higher degree of super-heat or, in other words, to allow less of the coil to frost up, and thus balance the temperatures.

This actually results in partially starving the case coil and should only be done when sacrificing a part of the case coil does not seriously affect or decrease the relative humidity in the case, or cause the case coil to build up frost.

When the temperature difference is sufficient to result in undesirable case conditions, a two-temperature valve should be used on the case coil and the expansion valve readjusted to maintain a 10° super-heat.

Most manufacturers supply a separate valve for each separate refrigerant. The refrigerant should be specified when ordering a replacement thermostatic expansion valve and it should be used only with the refrigerant intended unless the manufacturer specifically states that the valve may be used with any refrigerant.

Detroit model 674 thermostatic valve is illustrated in Fig. 165. Its operation is similar to No. 673 valve except that it is non-adjustable.

The non-adjustable valve is very practical in many applications where the correct super-heat is predetermined. In such cases, the valve is factory adjusted to maintain a certain degree of super-heat (usually 10° or other adjustments for special applications) and is not adjustable in the field.

It is considered that the main reason for the factory-adjusted valve is to prevent inexperienced operators from changing the adjustment when it is not necessary and for that reason creating unnecessary service expense.

One important point that must be carefully watched, especially with bellows type thermo valves, is the relative temperature location of the valve and thermo bulb. The valve proper must always be placed in a warmer location than the thermo bulb.

With the valve in the warmer location, the power element will only contain gas and the liquid will remain in the colder bulb. The liquid must remain in the bulb.

If the bulb is in a warmer place than the valve and power element, the liquid will leave the bulb and condense in the power element. In such a case, the valve will no longer function as a thermostatic valve, but its action will more closely resemble that of an automatic valve.

The Frigidaire thermostatic valve is illustrated in Fig. 166. It is of the bellows type and is adjustable. By turning the knurled adjusting nut "C" clockwise, more liquid will be admitted to the evaporator and vice versa.

Expansion valves have two major differences, one type employing a flexible metal bellows to obtain the movement created by the action in the thermo bulb, while the other type uses a diaphragm to obtain this movement. Diaphragm valves will be discussed later.

There are three different methods employed for charging the thermo power element and bulb assembly.

Detroit Lubricator Co., for example, employs what is known as the "gas-charged" bulb, while Fedders uses what is termed the "limited vapor" charged bulb.

Others (principally those companies that manufacture the diaphragm type of valve) use the liquid-charged bulb.

It is important to realize that regardless of the method of charging—liquid, gas or limited vapor—the feeler bulb in each instance always contains more or less liquid during normal operation. Regardless of the method of charge, the pressure in the power element depends upon the temperature of the feeler bulb during normal operation.

It is only during the pull-down period or during abnormal load conditions that the type of charge affects the valve operation. As a matter of fact these three types of charge differ only in the amount of liquid present.

With the liquid-charged bulb there is a considerable quantity of liquid, enough so that liquid is always present even at high temperatures. Therefore, the pressure in the power element is always in accordance with the temperature of the feeler bulb. This means that upon starting up a warm system the liquid-charged thermo valve begins to feed liquid from the start, and the suction pressure may be quite high during this pull-down period.

With the limited vapor charge as employed by Fedders and the gas-charged bulb employed by Detroit Lubricator Co. there is enough refrigerant charged into the bulb so that liquid is always present at normal operating temperatures, but at high temperatures the small amount of liquid vaporizes into a gas. As soon as this happens the pressure in the power element stops rising due to the fact that there is no more liquid present.

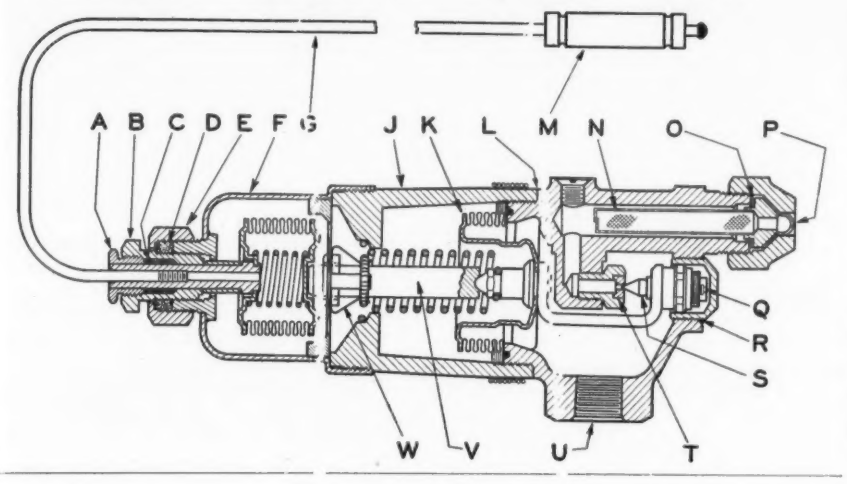
The pressure (or temperature) at which all liquid in the bulb becomes vaporized is called the maximum operating pressure or "cut-off point." The valve remains closed when the pressure is above this point. By this means the maximum operating pressure of the system is limited regardless of the temperature.

With the limited vapor charge employed by Fedders all bulbs are charged for a maximum operating temperature of 65°, which corresponds to approximately 65 pounds pressure with Freon, 50 pounds with methyl chloride, and 30 pounds with SO_2.

With the gas charge employed by Detroit Lubricator Co. the amount of charge in the bulb is regulated to suit the particular application. Thus valves used on low-temperature work such as ice cream cabinets are charged so that the maximum operating pressure during pull-down is limited to a low value so as to prevent motor overload.

Gas-charged valves for commercial or air-conditioning application require a higher maximum operating pressure, and the standard valves supplied by Detroit Lubricator Co. are charged for 20 pounds SO_2, 40 pounds methyl chloride, and 55 pounds Freon.

Detroit Thermostatic Expansion Valves



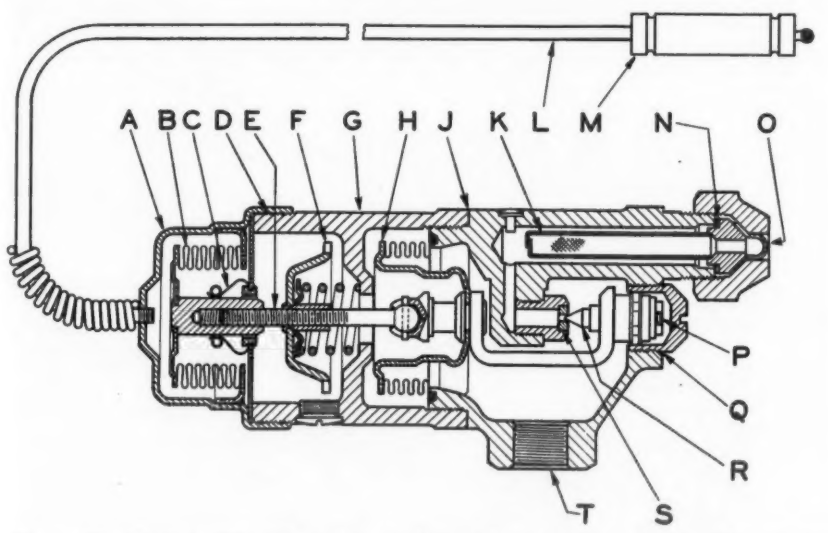


Fig. 165—Model 673 expansion valve (above) and model 674 non-adjustable expansion valve (below). Key to letters for model 673:

A—packing nut; B—spring-loaded packing around capillary tube; C—adjusting nut; D—packing around adjusting screw; E—packing nut; F—power element; G—capillary tube; J—Bakelite extension; K—body bellows; L—sealed joint; M—feeler bulb; N—inlet strainer; O—strainer gasket; P—inlet connection; Q—needle swivel; R—plug hermetically sealed; S—delubaloy needle; T—delubaloy seat; U—outlet connection; V—push rod; W—anti-chatter device.

Frigidaire Valve

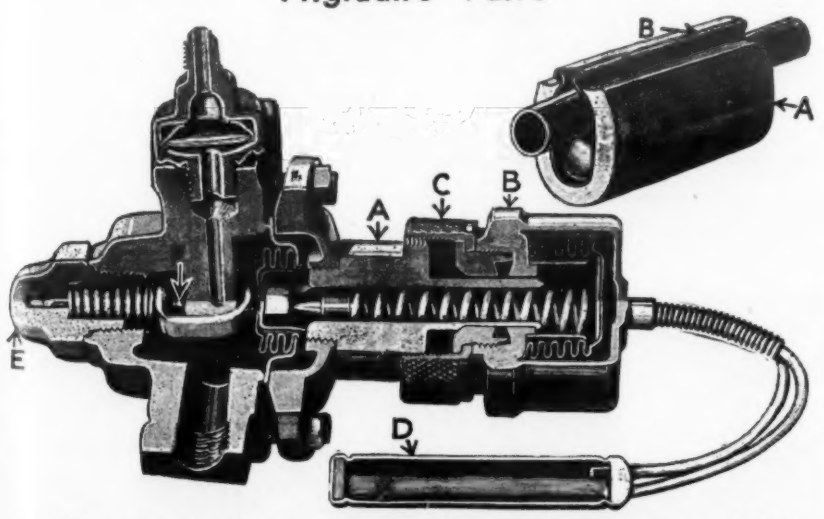


Fig. 166—Frigidaire thermostatic expansion valve. In the main part of the illustration "A" designates an insulator which is placed on the valve to break the contact between the metal housing of the thermostatic bellows and the metal valve body. "B" is the thermostatic element which may be entirely removed from the valve without damaging the mechanism.

Propose Licensing of All Pa. Refrigerating Engineers

HARRISBURG, Pa.—A bill providing for the State licensing of all refrigerating engineers has been introduced in the Pennsylvania House of Representatives.

The proposal, House Bill No. 1800, sponsored by Representative Dickinson, would make it unlawful for any person "to have charge of or to operate in any establishment unless holding such a license.

Licenses would be issued to persons over 21 with at least two year's employment "about equipment" during the preceding five years. Original license fee would be $5, annual renewal $2.

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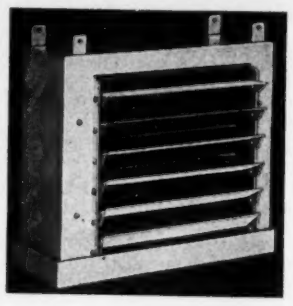

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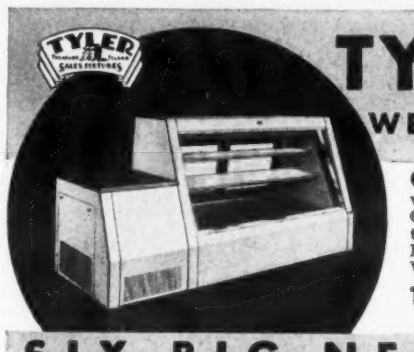

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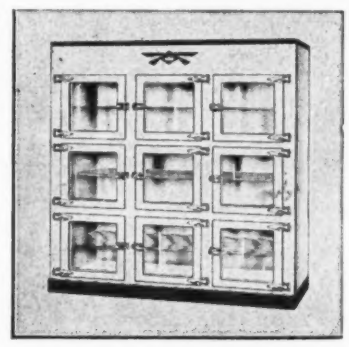

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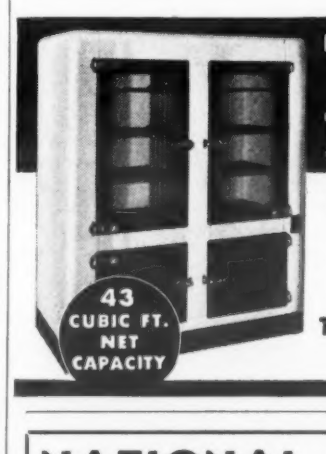

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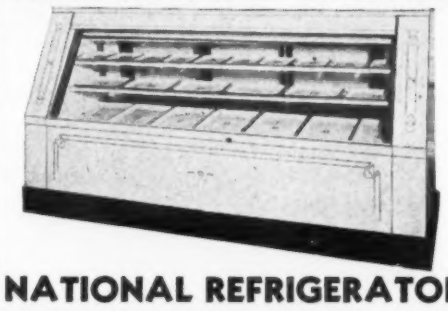

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